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A CONTRIBUTION TO CEREBRAL SURGERY.

DIAGNOSIS, LOCALIZATION, AND OPERATION FOR REMOVAL OF THREE TUMORS OF THE BRAIN: WITH SOME COMMENTS UPON THE SURGICAL TREATMENT OF BRAIN TUMORS.[1]

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The practical results from the study of cerebral localization in the successful surgical treatment of brain diseases form a subject of growing interest. Every fact which bears upon it, and every case in which an operation has been performed should be recorded, whether the result obtained be favorable or the reverse. Successful results are sure to be published. It is very desirable, however, in order that we may learn to properly estimate the dangers and difficulties that may be met with in the diagnosis and treatment of localizable disease, that all results, even those which are in some measure unfavorable, should also be made known. In this paper the surgical treatment of brain tumors is to be considered. The general results of operations hitherto recorded will be reviewed, and our own experience in three cases related.

[1] Read before the New York Academy of Medicine, January 5, 1893.

The number of cases of tumor of the brain in which surgical relief has been attempted, so far as we have been able to find reports in current literature, and including the three cases presented here, is 87. Seventy-four of these were tumors of the cerebral hemispheres; thirteen of them were tumors of the cerebellum. The results are given in the following table:

	Cerebral.	Cerebellar.	Total.
Total number of cases operated upon	74	13	87
Cases in which tumor was not found	16	7	23
" " " " found, but not removed . .	1	2	3
" " " " removed and patient recovered	38	2	40
" " " " " " " died .	19	2	21

It will be seen that the percentage of recoveries after the successful localization and removal of the tumor is 46. Considering how recently the facts of localization have been determined, and how novel is the surgical procedure of operation upon the brain, this large percentage of successful results is both interesting and encouraging. Therefore every case in which the presence of a tumor of the brain is suspected should be studied with increased care, and the question of operation should be thoroughly considered.[1]

It seems best to distinguish broadly between tumors of the cerebrum and tumors of the cerebellum. The diagnosis between tumors situated in these different regions is perfectly easy, and the risk of operation is so different as to demand their separate consideration.

As shown in the table already given, 74 tumors of the cerebral hemispheres have been treated surgically. In 16 of these cases the operation was unsuccessful, either because the tumor was not found by the surgeon at the point at which it was supposed to lie, or because the operation was undertaken for the relief of the symptoms caused by intra-cranial pressure, and not with a view to the removal of the tumor (8 cases).

In some of the cases the localizing symptoms were clearly insufficient to indicate the position of the tumor, and a cautious neurologist would not have advised an attempt to find it.

In others the localizing symptoms were well marked and the diagnosis seemed clear, yet the tumor really lay at such a depth as to be inaccessible, or infiltrated the brain to such an extent as to make removal impossible.

[1] The literature is extensive. Recent important articles are as follows: Weir and Seguin, American Journal of the Medical Sciences, July, August, and September, 1888; Keen, American Journal of the Medical Sciences, November, 1888; Park, "Surgery of the Brain," Transactions of the Association of American Physicians and Surgeons, 1889; Von Bergmann, Die chirurgische Behandlung von Hirnkrankheiten, 1889; P. C. Knapp, Intra-cranial Growths, 1891 (the last contains tables of all cases up to date of publication); Theodore Diller, The Pittsburg Medical Review, October and November, 1892.

In 57 cases out of the 74 the tumor was successfully located and removed: 38 of the patients recovered; 19 died. Of these 57 tumors, 34 were removed from the motor (central) region of the brain. It is in this region that the location of a tumor can be most easily determined, and here few mistakes in diagnosis have been made. The occurrence of spasm or of paralysis, limited to one limb or extending from one to the other in a definite order, is diagnostic. In one of the cases reported, the motor symptoms were certainly of the greatest service in determining the location of the tumor. So, too, in a case reported by Erb in July, 1892, in the *Deutsche Zeitschrift für Nervenheilkunde*. This case deserves mention on account of its unique history:

The patient was a male, who had suffered for some months from the general symptoms of brain tumor, namely, headache, vertigo, vomiting, and optic neuritis. The development of occasional spasms, followed by paralysis in the left arm and leg, indicated the central convolutions of the right hemisphere as the probable position of the tumor. Czerny operated in November, 1890, and found the tumor to be an infiltrating gliosarcoma. He removed a part of it—complete extirpation being impossible. The patient recovered from the operation, and was very much improved for eight months, when he began again to suffer from the old symptoms. In November, 1891, it was thought best to repeat the operation, and again a large part of the tumor was removed. Striking improvement followed this second operation; but at the date of the last report, July, 1892, symptoms had returned, and a third operation was under discussion.

This case demonstrates the possibility of relieving the most serious symptoms and of prolonging life even when the entire tumor cannot be removed.

The location of the tumor in the remaining 23 cases was as follows: in the frontal region in 6; in the parietal region in 3; in the occipital region in 1. In the remainder the location of the tumor was not exactly stated in the histories. It is evident, therefore, that tumors have been successfully removed from almost all parts of the convexity of the cerebral hemispheres. It is impossible either to satisfactorily diagnosticate or to remove tumors lying on the median or basal surfaces, and no attempt at such removal has been made.

Surgical treatment has been attempted in 13 cases of cerebellar tumor. In only 2 cases has the operation been successful, and in 7 cases the tumor was not reached. An abstract of all these cases is given at the end of this paper, in order that the difficulties met with may be appreciated.

An operation undertaken with a view to the removal of a tumor of the brain should be especially well considered beforehand. To a much greater extent than is at all frequent in other parts of the body are these operations essentially exploratory, and in spite of the very perfect

and constantly increasing knowledge of the character and localization of brain tumors, the operator will probably always be in doubt, until the tumor is reached, as to whether he will be able to remove it or not. Assuming that an accurate diagnosis has been made, and that the localization of the disease has been carefully studied by a skilled neurologist, grave doubt may still exist as to the consistency, the size, the vascularity, even as to whether the tumor is situated on the surface or buried to a considerable depth, and still more as to whether the tumor is encapsulated and easily enucleable, or so infiltrates the brain tissue as to present no definite border. Many exploratory operations in other parts of the body are extremely simple and perfectly safe, so long as the work done is confined to the strict nature of an exploration. We enter the peritoneal cavity, explore kidneys through incision in the loin, open joints, and take sections from tumors for examination with almost entire impunity from accident, so long as nothing more than investigation be made. The reason for this safety lies chiefly in the fact that the exploratory road is not difficult, and that such difficulties as exist are appreciated beforehand and are easily overcome. This statement, however, does not apply to operations upon brain tumors. Unexpected difficulties, even serious accidents, are liable to occur at almost any stage in the operation, so that from beginning to end the exploration itself is an operation of importance. This is better appreciated when we consider the causes of death after these operations, whether the tumor has been reached and removed or not. Excluding complications not immediately dependent on the operation, death has resulted in 54 per cent. of the cases operated upon, either from sepsis, hemorrhage, or shock, or from two or all of these causes combined. Sepsis need not be especially considered, as there exists no greater difficulty in avoiding it than the surgeon meets with in other parts of the body. Most careful antiseptic precautions should be taken. The head should be completely shaved, and great attention be paid to the thorough cleansing of the scalp, the operation being postponed if it is found that a moist eczema or other discharging surface exists at any point. Hemorrhage is a most important consideration. It begins from the moment the knife touches the scalp, is enormously different in quantity in different cases, and is liable to be unexpectedly increased at a later stage in the operation after the patient has already lost an important quantity of blood. I am convinced that hemorrhage deserves the closest consideration on the part of the operator.

The incisions in the scalp should unquestionably be free After opening the skull, it may be necessary to greatly enlarge the operative field, and this stage is a most unfavorable one for making first incisions in the scalp. It is best to lay bare a bone area at least three inches in diameter. The horseshoe-shaped incision, or one re-

presenting more than half of a circle, is most frequently used, and is doubtless the best. Such an incision allows a large flap, including all the integuments excepting the periosteum, to be easily turned back. The hemorrhage from this incision is very active, and the means adopted for its prevention not entirely satisfactory. The use of the rubber band wound tightly about the head below the field of work is exceedingly disappointing, probably on account of the shape of the skull, the rubber band not making constriction evenly about the whole circumference. Finger pressure over the afferent vessels is also insufficient, for only a few vessels can be compressed, while, owing to the free anastomosis in the scalp, the bleeding comes from every direction. I am inclined to think that the most practical and satisfactory method is to make the whole incision at once, immediately compressing the entire wound with dry gauze, and then lifting the gauze first at one point, and then at another, to seize the vessels in succession with pressure-forceps. With good assistance and active work the vessels can all be controlled pretty rapidly.

The next question that arises, after the vessels have been ligated and the very numerous pressure-forceps gotten out of the way, is: How shall the skull be entered? A very usual method by which the skull has been opened has been by means of the trephine, either large or small, the opening being afterward enlarged with the rongeur forceps. If a trephine less than an inch and a half in diameter be used, the opening made will not be large enough to treat any brain tumor, excepting a very small surface growth. The opening has usually been enlarged with rongeur forceps—a great sacrifice of bone, which cannot be entirely safely replaced, being thus made. If a still larger trephine is used, one has a clumsy instrument to work with, and still has a large bone defect to close. Ordinarily the button of bone had better not be replaced after the removal of a tumor, for the cavity in the brain frequently needs packing with gauze, and, besides, the button may necrose.

Having frequently made use of another method of entering the skull for extensive operations, I have no hesitation in recommending it to facilitate the removal of brain tumors. I refer to the method suggested by Wagner. It consists essentially in cutting through the skull with the chisel in the line of the scalp incision, the scalp flap not having been turned back. This bone flap with scalp flap still attached is then pried up and turned back, thus exposing as large an area of dura mater as the original incision outlined. The method is practically applied as follows: The horseshoe-shaped scalp incision having been made and all vessels caught and tied, the cut is deepened through the pericranium in the same line, so that this tissue may not be injured when working on the bone. At the centre of the convexity of the incision, the pericra-

nium is turned back far enough to permit of the application of a half-inch trephine. This small button of bone is removed to allow of the subsequent use of the elevator. Starting from this trephine opening with a very small gouge, a shallow groove is cut following the line of incision in scalp and pericranium. Cutting this groove prevents subsequent splintering of the surface. Then with a sharp osteotome held nearly parallel with the surface of the skull, it is not difficult with the mallet to cut through the skull without injuring the dura mater, until, introducing an elevator into the trephine opening, the whole plate of bone can be pried up, the uncut portion of its circumference readily breaking. The whole plate of bone has the pericranium and scalp flap attached, and opposite the line of fracture, even, the pericranium remains untorn. Slowly lifting the bony plate and feeling beneath it to make sure that vessels or adhesions are not rudely torn, the entire mass can be turned back and the dura exposed. If localization has been fairly correct it will not now be necessary to enlarge the opening. Hemorrhage from the bone may be, as it was in one of the cases reported, excessive; usually, it will cease after short pressure; if not, the larger vessels should be plugged either with gauze or bits of sponge or catgut. Hemorrhage from the surface of the dura is usually slight, and can be most rapidly stopped with a light touch of the Paquelin cautery, or, if one prefers, a fine curved needle threaded with catgut may be passed under the bleeding-point and the vessel tied.

To open the dura, I prefer to cut directly down upon it with the knife at a point an eighth or a quarter of an inch away from the bony margin. When an opening is made, small blunt scissors may be introduced, and the whole flap of dura, similar in shape to the bone flap, turned back. Picking up the dura mater with a tenaculum is more likely to be accompanied by a wound of a vessel in the pia mater. Of course, if the dura is adherent, the flap must be cautiously made and reflected. Color, consistence, bulging, and pulsation of the surface of the brain are now all rapidly determined. If the tumor is evident at once and clearly defined, with a capsule, its enucleation with the finger or blunt scissors is not difficult. If tumor tissue is plain, but the growth infiltrates the brain substance, it may be very difficult to decide when to stop in attempting removal. If clearly not removable *in toto*, it may still add much to life and comfort to remove a portion, as was shown in Czerny's case, intra-cranial pressure being relieved. As a rule, if removal is begun, it had better be completed, for to leave a portion of an infiltrating tumor is to leave the patient with the certainty of recurrence at an early date. If tumor tissue is not seen on the surface, its presence beneath the surface may be suspected from the prominence of, and the absence of pulsation in, the surface tissue. Palpation may define that a solid tumor exists below; or a blunt probe may be pushed in the most likely direction to see if

resistance is encountered; or an aspirating-needle may be introduced to determine the presence of fluid. If a solid tumor is discovered, the convolutions over it should be separated or the brain should be incised, as may be necessary, and removal effected, if possible by enucleation. If a cystic tumor is found, it should ordinarily be incised and drained. Drainage can best be effected by the introduction through the incision of a narrow strip of thin rubber tissue which has been folded once or twice upon itself. Fluid flows out by the side of this material perfectly well, and the thin and flexible tissue is incapable of doing harm if thoroughly aseptic. Wounded vessels in the pia mater may be quite troublesome, not so much from the quantity of blood lost as from the amount of time lost in attending to them. Their walls are so delicate that the ligature is applied with difficulty. A light touch with the cautery is the quickest way of disposing of the smaller ones, and the larger ones may be compressed by a bit of sponge in the hand of an assistant, and the cautery or a ligature applied, if necessary, later. The wounding of one of the large venous sinuses, or of a vein near the point of entrance into a sinus, is sure to be followed by abundant hemorrhage. If the wound in a sinus is large, it had best be immediately packed with gauze. If it is small enough to be closed by one or two pairs of pressure-forceps, these may be applied, and left in position supported by the dressings for two or three days. It is useless and time-consuming to try to ligature or sew up a wounded sinus.

Free hemorrhage from the cavity left after removal of a tumor should be met by immediate compression with gauze packing, which may be left in place, if necessary, until a change of dressings is made. In operating for tumor in the cerebellum, the method last recommended for entering the skull is hardly applicable. The area is too small and the danger of wounding the sinuses too great to allow of the lifting of a bony plate with the thick flap of soft coverings. It is better here to sacrifice the bone, making a small, safe opening with trephine or chisel opposite the centre of the fossa, and then enlarging the opening on all sides with forceps. The fact that the present knowledge of cerebral localization does not enable us to decide whether a cerebellar tumor is a surface or a deep one, renders these operations more especially exploratory. Whether it is safe or justifiable to cut away a considerable portion of cerebellum, in order to reach a deep-seated tumor in this region, further experience is needed to decide.

If a tumor has been found and removed, the dura mater would probably be only partially stitched back into place by fine catgut stitches, as to completely close a cavity in the brain in which bleeding was still going on would subject the patient to the dangers of compression. Therefore, usually packing would at first be left in place, or other drainage provided for. If a tumor is not found and no contra-indication to

complete closure exists, the dural flap may be replaced and stitched all the way round to the narrow border left for that purpose. The advantage of the large single bone flap is now readily appreciated. The osseous plate with pericranium undisturbed and integument undissected is turned back into place and fits accurately. The skin may be stitched all the way round or not, according as drainage must be provided for or is not needed. The small trephine opening is there if a drain is required. If packing has been introduced, the bony plate may be left partly raised like the lid of a box, and only pressed into place after the packing has been removed.

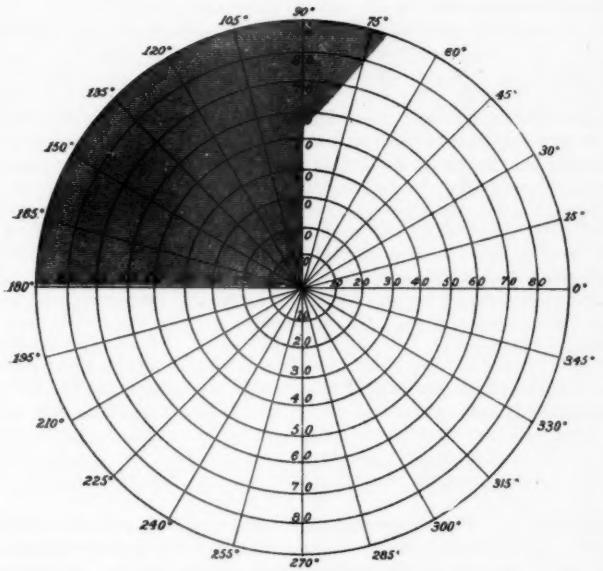
The question of hemorrhage has been referred to in detail, because blood loss in itself has undoubtedly not a little to do with the death-rate after operations for brain tumors. Bleeding is met with in most cases at every stage in the work, and not only may the sum of the loss be considerable, or even very large, but every moment spent in attending to it prolongs the operation, and so directly contributes to inducing the third cause of fatality mentioned, namely, shock. The length of time occupied and the size of the tumor bear a direct relation, as in the surgery of other parts of the body, to the amount of shock developed. Every effort should, therefore, be made to shorten the time occupied in operating, as the size of the tumor will be accurately known only at a late stage in the operation. No especial means either for the prevention or treatment of shock from operations upon brain tumors exist, other than those with which every surgeon is familiar when he meets with this condition under other circumstances.

CASE I. *Sarcoma of the left frontal lobe; mental and motor symptoms; successful localization and removal; subsequent death.*—C. S., aged forty, a farmer by occupation, of good family history, and of good general health until this illness (with the exception of specific disease acquired at the age of twenty-two, but without subsequent manifestations), was suddenly seized with a convulsion in December, 1890, while driving a cart. He remembers a sudden feeling of dizziness and distress, and then a turning of his head forcibly to the right side; he has no recollection of what followed, but learned that he had been found upon the road, had been picked up and carried home, where he remained unconscious for two hours and a half; he is not sure whether he had a general convulsion. On recovering consciousness he found his right side, including face, arm, and leg, slightly weak, and noticed some difficulty in talking; this condition gradually subsided, so that in two weeks he was able to go back to his work, and felt in his usual health. This is the only convulsion or sudden attack of any kind which occurred during his entire illness. But it is from this attack that his illness dates.

The various symptoms which subsequently developed were very gradual in their onset, so that it is quite impossible to fix any dates for particular symptoms. During the six months from January, 1891 to July, 1891, he suffered occasionally from headache and nausea, and in July began to notice that his sight was growing dim, and that the head-

aches were becoming more and more frequent and intense. Between July, 1891, and January, 1892, the pain became localized over the forehead and top of the head on the left side; it was not particularly worse at night, but at times was very severe. During this period he noticed a progressive dulness of thought, general hebetude, an aversion to work which was unnatural to him, and a slowness of mental activity which he described as increasing stupidity; and increasing difficulty in the use of language, so that it took him longer to express his ideas, there being, however, no difficulty in articulation and no lack of words.

FIG. 1.



CASE I.—The visual field of the left eye.

He also noticed by the close of the year that his right side had become a little weaker than his left side; that his hand was slightly awkward and that his leg felt a little heavy. The symptom, however, which caused him most distress, was his gradually increasing dimness of vision, and it was on account of this that he came to New York from his home in Alabama. He was seen at the New York Eye and Ear Infirmary by Dr. Derby, who discovered a well-marked condition of optic neuritis in both eyes, more marked in the left eye. V.: O. D., = 20/L.; O. S., = 20/xx. In right eye the upper and inner quadrant of visual field wanting. Dr. Derby referred him to the Nervous Department of the Vanderbilt Clinic for confirmation of his diagnosis of cerebral tumor, and also for treatment.

When I first saw him at the clinic on January 14, 1892, the following symptoms were present: severe and constant *frontal headache* located

over the top of the head, and more especially over the left side, about at the upper third of the coronal suture, and at this area, over a space about three inches in diameter, there was considerable *tenderness to percussion*. There was no vertigo on rising or on change of position. There was a state of *partial blindness* due to the very well marked condition of *optic neuritis*, and decidedly worse in the left eye.

There was a condition of *mental dulness* which was noticeable, and which he himself and a friend who accompanied him insisted was wholly unnatural. This dulness consisted in a slowness of thought, which made him appear very stupid. It took him some time to appreciate the meaning of questions, and it was an effort to answer them. This effort was not due to any actual disturbance of speech, any loss of words, or any difficulty in pronunciation, though he complained that he could not talk as fluently or rapidly as heretofore. The condition was therefore in no sense an aphasic one, but could only be spoken of as a slowness in mental processes. His comprehension was good and his conclusions were correct, when he had time to think, but rapid mental action was impossible, and if insisted upon he became confused and would say that he could not think. Hence he distrusted his own mental power, and said that he did not think that his judgment was as good as formerly. He was disinclined to occupy himself in any way, and sat in a listless manner, saying nothing for hours at a time. He would often sleep in the daytime, though at night his sleep was often broken by his pain. It was not easy for him to hold his attention to any subject continuously for any length of time. His mental state might be termed a dull listlessness, and gave the impression that he was a sick man.

Careful examination detected the existence of a *slight right hemiplegia;* his face was slightly flattened and slow in motion on the right side; his hand was somewhat awkward and clumsy, the power being 140 by the dynamometer, that on the left being 160. He dragged the toe slightly in walking, though his gait was not noticeable. He had great exaggeration of the knee-jerks and marked ankle clonus. He complained of a feeling of numbness, both in the hand and foot, but there was no objective anæsthesia.

Diagnosis. From these symptoms a diagnosis was reached of a brain tumor. The situation of the tumor was not easily determined. The slight right hemiplegia indicated that it was in the left hemisphere of the brain, near to but not within the motor region. The hemiplegia had appeared long after the other symptoms, hence it was evident that the motor zone had been only reached when the tumor had become large. The position of the headache and of the tenderness to percussion over the frontal region, and the existence of the mental symptoms described, appeared to indicate the frontal lobe as the probable situation. This was confirmed by the absence of anæsthesia or of hemianopsia or of sensory aphasia, all of which conditions would have been likely to have been present in a tumor situated near to but behind the motor zone in the parietal lobe. The mental symptoms were considered of very great importance in the diagnosis of a frontal lobe lesion.

A study of twenty-three cases of disease of the frontal lobes of the brain,[1] made by one of us in 1884, showed that decided mental disturb-

[1] Starr: "Cortical Lesions of the Brain," The American Journal of the Medical Sciences, April, 1884.

ance occurred in half of the cases. At that time the following conclusions were reached: "The form of mental disturbance in lesions of the frontal region does not conform to any type of insanity. It is rather to be described as a loss of self-control and a consequent change of character. The mind exercises a constant inhibitory influence upon all action, physical and mental, from the simple restraint upon the lower reflexes, such as the action of the sphincters, to the higher control over the complex reflexes, such as emotional impulses and their manifestation in speech and expression. This action of control implies a recognition of the import of an act in connection with other acts; in a word, it involves judgment and reason, the highest mental qualities. By inhibiting all but one set of impulses it enables one to fix the attention upon a subject and to hold it there. It seems probable that the processes involved in judgment and reason have, for their physical basis, the frontal lobes; if so, the total destruction of these lobes would reduce man to the state of an idiot; their partial destruction would be manifested by errors of judgment and reason of a striking character. One of the first manifestations would be a lack of that self-control which is the constant accompaniment of mental action and which would be shown by an inability to fix the attention, to follow a continuous train of thought or to conduct intellectual processes. It is this very symptom that was present in one-half of the cases collected. It occurred in all forms of lesion: from injury by foreign bodies, from destruction by abscess, from compression and softening due to the presence of tumors, and, therefore, cannot be ascribed to any one form of disease. It did not occur in lesions of other parts of the brain here cited. But its presence in such a large number of these cases warrants the suggestion that in cases of suspected lesion of the frontal lobe, the mental condition of the patient as shown by his acts of judgment and reason should be carefully examined, and a change of character or behavior accurately noted."

Ferrier, in his Croonian lectures in 1890, again called attention to the occurrence of such mental symptoms in connection with diseases of the frontal lobes.

Welt (*Alienist and Neurologist*, April, 1890) concluded from a study of eight cases under his observation, that changes in character and disposition are characteristic of lesions in the frontal lobes. He says they may be the only symptoms present.

W. Gilman Thompson (*Medical News*, May, 1891) has described changes in temperament and alterations in the intellectual sphere occurring in three cases of tumor of the frontal lobes under his observation.

Schoenthal has also recorded a case diagnosticated as hysteria on account of the mental peculiarities and lack of self-control, in which a large tumor of the frontal lobe was found after death.

Griffith and Sheldon (*Journal of Mental Science*, 1890, p. 223), in

reporting a case of tumor invading the median surface and base of both frontal lobes, in which mental symptoms were absent, call attention to the fact that mental symptoms occur chiefly when the cortex of the convexity of the frontal lobes is invaded; and this statement is borne out by my own collection of cases before alluded to.

The review of these cases, therefore, pointed to the conclusion that mental symptoms are likely to be produced by a tumor in the frontal region, and this fact was considered of much importance in determining the situation of the tumor in this case.

The diagnosis of the nature of the tumor was somewhat difficult. The existence of specific disease pointed to gumma, and made it seem proper to try the effect of specific treatment; he was therefore put on inunctions of mercury and increasing doses of iodide of potash, which was carried to the point of three hundred grains a day. This treatment was pursued without much apparent change in his condition. He then escaped from my observation for two months, but returned about the first of June to the clinic.

It was then found that his headache was still severe, was still localized in the left side of the forehead. It was found that his sight was much worse, so that he was nearly blind in the right eye and could not read letters with the left eye. His hemiplegia was more marked; his face was flatter on the right side; his arm and hand more clumsy, and there was a decided dragging of the right foot. He complained that his right leg was getting stiffer all the time and that it felt dead. He said that he had recently been having twitching in the right leg, as often as two or three times a day. He also said that at times his hand became clenched without his power to resist it, but he denied the existence of any clonic spasms. He had had some difficulty in micturition during the past months, it being impossible for him to control his bladder perfectly, the urine flowing unexpectedly. His speech was slower, and there was a noticeable tendency to the malposition of words in sentences, which, however, he noticed himself and corrected; he would often say "no" for "yes," and *vice versa*. His mental activity was evidently much weaker than it had been five months before.

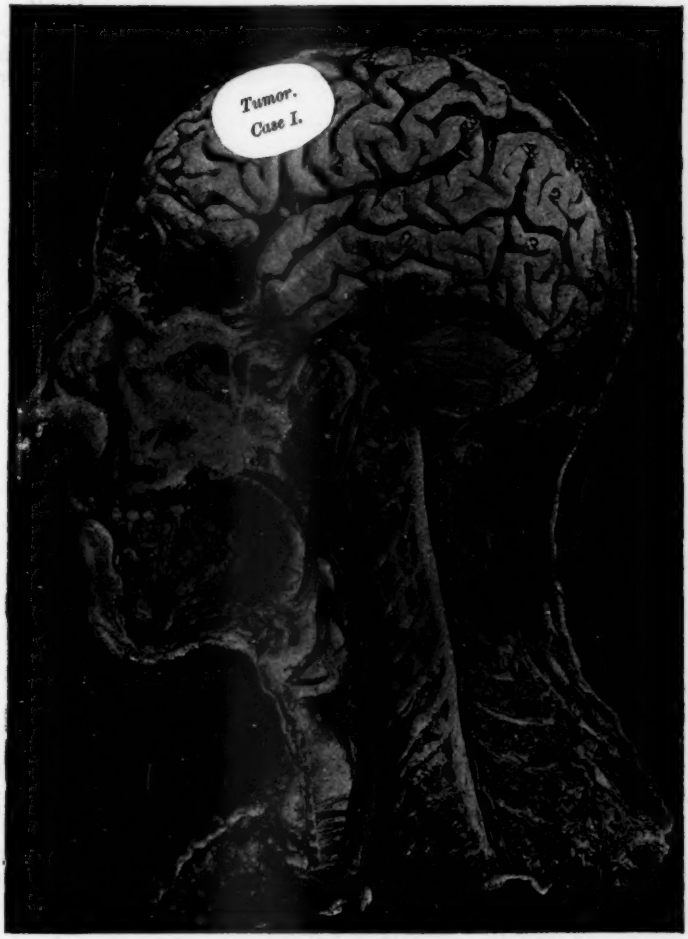
Under these circumstances it seemed evident that specific treatment had failed of effect, and he was induced to enter Roosevelt Hospital and submit to an operation.

Operation. The operation was performed by Dr. McBurney on June 23, 1892. Ether anæsthesia. A semi-elliptical incision was made in the scalp, outlining an area which measured about three inches in each direction, the attached base of the flap being below. The centre of the flap coincided with a point an inch and a half anterior to the fissure of Rolando, opposite the junction of its upper and middle thirds.

The tumor was believed to occupy the posterior part of the second frontal convolution, just anterior to its junction with the anterior central convolution. The hemorrhage caused by this incision was excessive, certainly treble the usual amount, and required a large number of pressure-forceps and ligatures for its control. A button of bone, one inch in diameter, was then removed with the trephine from the centre of the area exposed by turning down the flap. This opening was enlarged with rongeur forceps downward and forward until it measured

two inches by one and three-quarters. (Fig. 3.) The dura appeared to be thickened and was unnaturally pale, but pulsation seemed normal

FIG. 2.



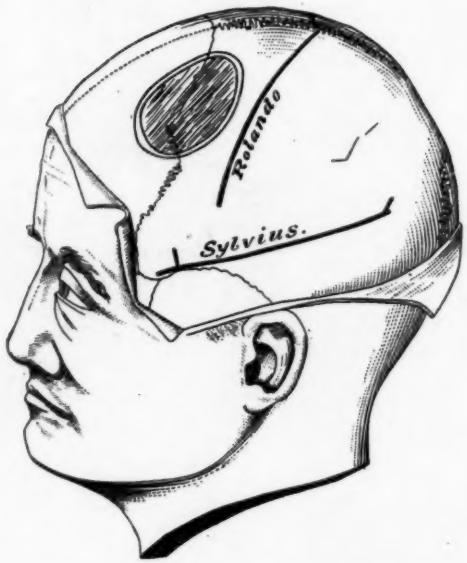
Situation of a tumor, shown in a photograph from Fraser's *Guide to Cerebral Operations*. The size is in exact ratio.

and no bleeding was noted. Profuse hemorrhage occurred from the veins of the diploë, and no little difficulty was met with in its manage-

ment. The largest of these veins were occluded only by plugging their orifices firmly with small bits of sponge.

The dura mater was then incised near the edge of the opening in the bone and turned down as a flap. It was quite adherent to the surface of brain beneath it, which was uniformly dark in color and very vascular. At the first inspection the surface seemed to be that of a much-congested ordinary cortical substance. It was, however, firmer in consistence than was normal, and a good-sized section was removed with the knife; it was then clear that the whole area exposed was tumor

FIG. 3.



tissue. At the end of the section removed, a distinct capsule was met with; following this with finger and blunt scissors, it was not difficult to completely enucleate the large tumor, which extended in every direction beyond the edges of the opening already made in the skull. (Fig. 3.) The tumor was ovoid in shape, measuring two and one-half by one and three-quarters inches. (Fig. 4.) It was completely enclosed by a capsule, and after its removal a large cavity in the cortex remained. This cavity bled profusely at every point; the hemorrhage requiring for its control complete packing with iodoform gauze. The flap of integument was partially replaced and sutured at the sides only, a large, loose antiseptic dressing being applied over all.

Loss of blood and shock produced a marked effect upon the patient's general condition before the close of the operation, and both rectal and hypodermatic stimulation were actively applied, and after the patient's

removal to bed he was given constant attention and every effort was made to improve his condition. After a large intra-venous infusion of normal salt solution temporary marked improvement was noted, but the pulse soon failed again and death occurred about midnight, eight hours after operation.

The exact situation occupied by the tumor is shown in Fig. 5. It involved the posterior part of the second frontal convolution, the adjacent portion of the first frontal, and the upper half of the anterior central convolutions. The entire anterior central convolution must have been compressed to some degree, and indirect pressure must have been exerted upon the third frontal convolution below the tumor. The situation of the tumor corresponded, therefore, very accurately to the diagnosis made before operation, but the size of the mass was much greater than had been anticipated. After hardening in Müller's fluid

FIG. 4.

The tumor in Case I. With inch measure.

and alcohol, it displaced 50 c.c. of water, weighed 4 grammes, and measured $2\frac{1}{2} \times 2 \times 1\frac{3}{4}$ inches. The tumor was carefully examined by Dr. Eugene Hodenpyl, and was reported by him to be a true sarcoma, consisting of a large number of delicate bloodvessels and rather large irregular, but not branching, cells closely packed together with very little intercellular substance.

An earlier operation, when the tumor was much smaller and the vascularity of the tissues much less, would very probably have been successful. It was proposed to the patient in February, four months before it was done. The delay, which he insisted upon, was more readily submitted to because of his specific history, which induced us to give him the benefit of the doubt and to try anti-syphilitic treatment. If Horsley's dictum had been accepted, namely, that gumma is not curable

by medicine and should be operated for (a dictum, however, which the experience of others in several cases does not support), an earlier operation would perhaps have been undertaken. The size of a brain tumor has undoubtedly much to do with determining the amount of shock resulting from its removal.

FIG. 5.

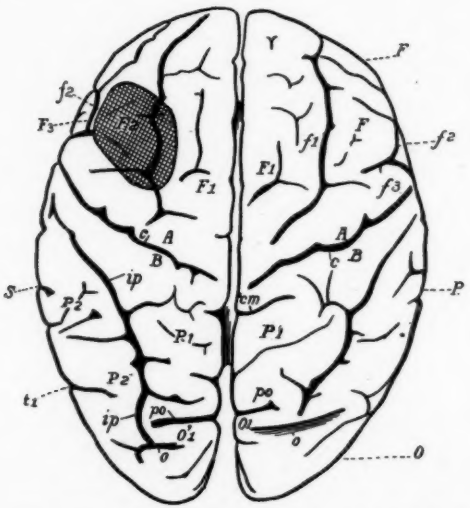


Diagram of the superior surface of the brain, to show the situation of the tumor in Case I.

This tumor was about as large as one removed by Dr. Keen and described in THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES for November, 1888, and another operated upon by Prof. E. Hitzig, an account of which was published in the *Berliner klinische Wochenschrift* for July 18, 1892.

SUMMARY.—In this case the diagnosis of the tumor of the brain was made from the general symptoms—headache, optic neuritis, and tenderness to percussion of the head, and from the local symptoms—mental dulness, slowness of speech, slight right hemiplegia with subjective numbness and occasional twitching in the paralyzed limbs. The situation of the tumor was determined by the slow onset of the hemiplegia, by the very marked mental symptoms, and by the location of the tenderness upon the head. Attention has already been called to the value of the mental symptoms in the localization of the tumor, and no further comment upon them is necessary. This is the first case, however, in which operative interference has been so distinctly directed by the existence of mental symptoms.

It is interesting to note that the first symptom in this case was a convulsion beginning with a turning of the head and eyes to the right. The motor centres for movements of the head and eyes have been located by Horsley at the posterior part of the second frontal convolution, and it was exactly in this region that the growth must have commenced. The absence of serious paralysis at any time—for the man was perfectly able to walk, to feed himself, or even to write, up to the day of the operation—shows that the pressure upon the motor zone of the cortex was not sufficient to arrest its function. And it is interesting to observe that this pressure having been exerted very gradually did not at any time induce cortical spasms, for the slight twitching of hand and leg, which were complained of late in the history, were not of the nature of Jacksonian epilepsy. The tumor lay upon the cortex in a capsule of its own, and did not produce any apparent pathological changes in the cortex itself, though this supposition could not be confirmed by microscopical examination. There was no evidence of softening or encephalitis. The amount of pressure or compression which the cerebral tissue will admit without manifesting evidence either of irritation or of arrest of function was peculiarly illustrated in this case. The situation was exactly such as to have caused agraphia, had the theory of a motor centre for writing independent of the hand centre been correct, but there was no agraphia present.

Tumors of the cerebellum are not at all infrequent, and, as a rule, are easily diagnosticated. The following histories illustrate the symptomatology of the disease, and the difficulty in the way of its exact localization in the cerebellum and in the way of surgical interference for the removal of tumors of the cerebellum.

Case II. *Fibro-sarcoma of the cerebellum and pons Varolii; staggering away from the side of the tumor; operation; death.*—Male, aged thirty years; was under my observation from January, 1890, until December, 1891, when he died. He was referred to the Nervous Department of the Vanderbilt Clinic by Dr. Weeks. When first seen he was suffering from severe frontal and occipital headache; from vertigo, which was much increased by moving the head suddenly, or by lying down; from tinnitus aurium; from numbness in the left side of the face and in the mouth; and from a very continuous feeling of drowsiness and dulness. These symptoms had developed gradually during the preceding three years, and within a year he had also noticed double vision and a gradually increasing blindness. His friends said that his speech had become slow and thick.

Examination showed a large, very dull, stupid man, with prominent eyes, the left one deviating outward, dilated pupils, and marked nystagmus on lateral movement of the eyes. Dr. Weeks had found well-marked choked disks and a diminution of the visual fields. There was some slowness of speech, which was accounted for by his mental dulness, there being no evidence either of aphasia or of paralysis of the tongue.

There was no disturbance of sensation, or of motion, or of reflex action, and there was no ataxia in his gait. The existence of headache, vertigo, tinnitus aurium, nystagmus, diplopia, and choked disks established the diagnosis of a cerebral tumor, but no conclusion regarding its localization could be reached. That the tumor was not a gumma was admitted, as he denied all specific infection, yet he was put upon mercury and iodide of potash on the supposition that he might have acquired the disease without his knowledge.

During the year 1890 the symptoms continued, and gradually increased in intensity, so that by the first of October he had become quite blind, with well-marked optic atrophy; and also deaf in the left ear, in which ear the tinnitus aurium had been intense. By this time, also, local symptoms had developed, which gave an indication of the site of the tumor. There was a considerable degree of staggering in walking, with a tendency to fall forward and toward the right, and a marked tendency to turn toward the right in walking. In addition, there was some weakness in his right hand, the dynamometer registering only 39, while it registered 60 in the left hand. There was no ataxia or disturbance of sensation in the limbs. There was no apparent difference in the power in the legs, but the knee-jerk was exaggerated on the right side, and a slight clonus was obtained in the right foot.

The staggering was of the kind observed in cerebellar disease—a gait like that of a drunken man, without falling, but with every appearance that the balance was uncertain. The tendency to turn and to fall to the right was noticed on every occasion on which he was tested.

Diagnosis. The staggering seemed to prove that the disease was located in the cerebellum, and the question arose whether its direction, toward the right, pointed to the side on which the tumor lay. Ross makes the statement that staggering is toward the side of the tumor. Out of eighteen cases of cerebellar tumor in which staggering toward one side was observed during life, which I have been able to find after careful search in the literature, fourteen were found to have had the tumor on the side opposite to the staggering—*i. e.*, 77 per cent.—and four were found to have had the tumor on the side toward which the patient staggered. While staggering is a symptom commonly found in cases of cerebellar tumor, staggering in one particular direction is a symptom by no means frequent, being recorded in but three cases in a collection of ninety-six cases of tumors of the cerebellum in children, made by me three years ago, and in only nine of Bernhardt's ninety cases. It is certainly more commonly observed when the disease involves one of the middle peduncles of the cerebellum, and therefore has been recorded in some cases of tumors upon the base involving the side of the pons Varolii. But here, also, there seems to be no absolute rule. I have recorded[1] two cases of unilateral disease of the pons with marked unilateral cranial nerve palsies in which the patients staggered toward the side of the lesion; but there are other cases on record in which the staggering was away from the lesion.

[1] Familiar Forms of Nervous Disease, pp. 119–123.

The most recent investigations upon the physiology of the cerebellum are contained in the elaborate work by Luciani, published last year.[1] In regard to the symptoms of rotation produced by the destruction of one-half of the cerebellum, he says that rotation may be of two kinds: the first due to irritation, the second due to paralysis.

1. Irritative rotation is caused by traumatism or an inflammatory condition of the peduncular fibres. It consists in rotation from the wounded toward the sound side, for in this instance the want of equilibrium is generated by a unilateral exaggeration of the cerebellar influences transmitted by the irritated peduncle.

2. Paralytic rotation is caused by the simple section of a peduncular strand. It consists in rotation from the sound toward the wounded side, because here the want of equilibrium arises from the fact that one-half of the centres in connection with the wounded peduncle suddenly lose their cerebellar influences, whilst others retain it.

In the light of these experiments, and the conclusions from them, it is evident that in those cases in man in which the patient has staggered away from the lesion, the condition has been one of irritation, while in those cases in which the patient has staggered toward the lesion the condition has been one of destruction in the middle peduncle of the cerebellum. It is as yet impossible, however, during life to determine from the symptoms, in any individual case we are dealing with, whether there is irritation or destruction of the cerebellar peduncle, and therefore, as already observed from the direction of the staggering, any positive conclusion as to the location of the disease cannot be reached.

While the staggering in this case indicated that the cerebellum was affected, its direction to the right was not considered sufficiently diagnostic to decide absolutely the question regarding which side was involved, though it pointed strongly to the left side.

That question seemed, however, to be decided by a study of the other symptoms. The patient had complained early in the disease of pain and numbness in the left half of the face, though at no time did examination show any anæsthesia. He also had much tinnitus in the left ear, which had been followed by progressive deafness. His headache, which had, at first, been frontal, was later referred with much constancy to the left occipital region, and in speaking of it he habitually put his hand back of his left ear. The weakness of the right hand and the exaggeration of the spinal reflexes on the right side, taken in connection with these left cranial nerve palsies, appeared to indicate some pressure on the left side of the pons and medulla.

Thus the staggering to the right, the left cranial nerve palsies, and

[1] L. Luciani: Il Cervelleto, Firenze, 1891. Deutsche Ausgabe von Dr. M. O. Fraenkel, Leipzig, 1893.

the right hemiplegia, all pointed to a lesion in the left side of the posterior cranial fossa.

The diagnosis was therefore made of a tumor on the left side of the cerebellum. The negative result of specific treatment indicated that it was not a gumma, and the very slow progress of the case indicated that it must be a slowly forming tumor, probably sarcoma, inasmuch as such tumors are more common than any other kind.

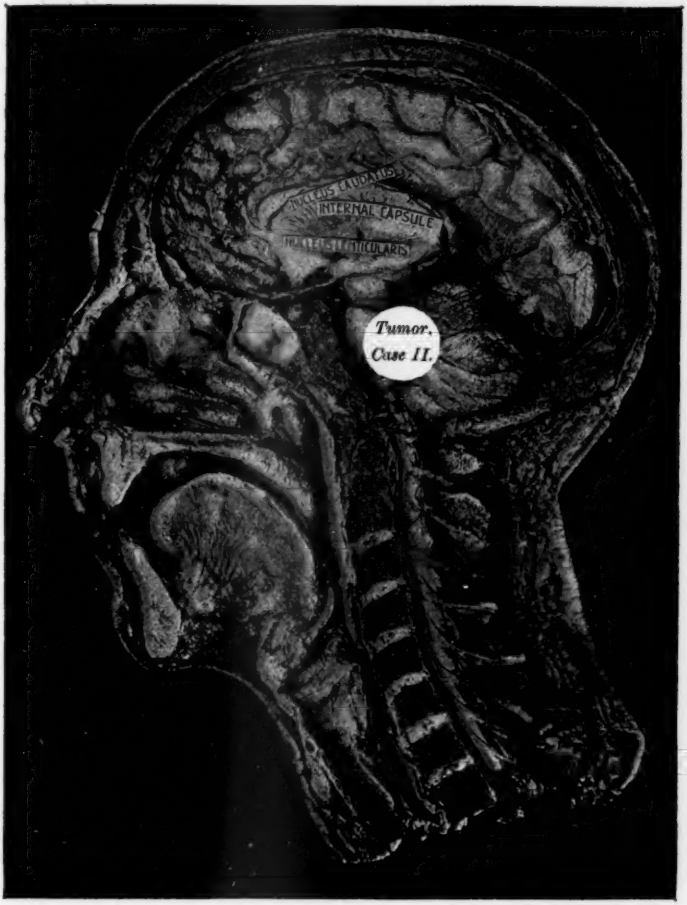
During the following year, from October, 1890, to November, 1891, the patient was seen occasionally, being apparently in a stationary condition. Finally he was induced to enter the Roosevelt Hospital for operation. And he was then quite willing to submit, though knowing the dangers, because his life was a burden, for he was blind and partly deaf, and suffering from severe headache, vertigo on any movement, and such exaggerated staggering that he could not go about. A careful examination in the hospital on December 1, 1891, confirmed the existence of all the symptoms hitherto mentioned, but failed to elicit others.

Operation by Dr. McBurney on December 3, 1891. Ether anæsthesia. A vertical tongue-shaped flap was marked out with the knife over the left half of the occipital bone. The upper free convex border of this flap corresponded nearly to the superior curved line of this bone. The attached base was on the back of the neck, about opposite the second cervical vertebra. The incision was carried down to the periosteum, and all the coverings were removed in one flap. Experiments on the cadaver had satisfied the operator that the safest and most convenient method of entering the cerebellar fossa was by the use of the chisel and mallet. This method was adopted here, and an opening about one and a half inches in diameter was made through the thin bone, care being taken to be far enough away from the large venous sinuses. The dura mater was not diseased, but bulged very strongly through the opening in the skull in such a manner as to at once suggest great intracranial pressure. Protrusion of cerebellar tissue was still more marked after the dura had been turned back as a flap from over its surface. Otherwise, however, the surface of the cerebellum was normal in appearance, and palpation failed to give evidence of the existence of tumor. It was found to be quite easy to introduce the finger for some distance into the skull on all sides of the cerebellar hemisphere, to thus examine a large part of its surface, and to distinctly palpate the lateral and vertical sinuses. But nowhere could the existence of tumor be demonstrated. So much protrusion of cerebellar tissue existed that it was necessary, in order to close the opening in the skull at all satisfactorily, to shave off the excess, which was done with the less compunction, as even the gentle manipulations practised had somewhat injured the delicate surface convolutions. Hemorrhage throughout the operation was very moderate and easily managed. The flaps of dura mater and overlying soft parts were then replaced, fastened in all deep parts with catgut, the skin wound being sewed completely with silk. A wet bichloride gauze dressing was applied over all, and the patient was removed to bed in excellent condition.

Convalescence was perfectly satisfactory, and on December 9th, six days after operation, the temperature being 99° and the pulse 100, the dressing was changed for the first time. Primary union was found throughout the whole extent of the wound, and all sutures were removed.

During the following night the patient fell out of bed, and immediate examination revealed the presence of a large blood-clot beneath the skin flap. No other injury seemed to have resulted from the fall, but

FIG. 6.



The situation of the tumor in Case II., shown on a Fraser photograph. The difficulty of removal is evident from its deep situation.

at 5 P.M. on December 10th a chill occurred, followed by a temperature of 103°.

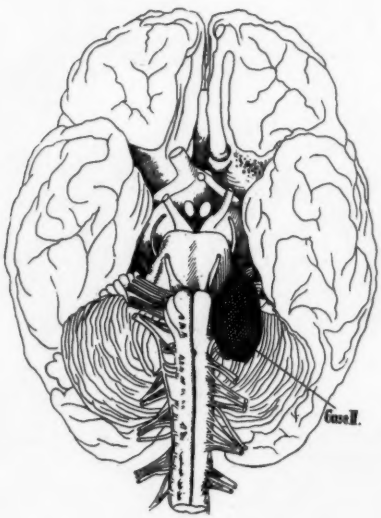
Difficulty in swallowing was then noted, and although at the end of

two days the temperature fell to 99°, stupor gradually increased and involuntary evacuations of rectum and bladder began. The wound remained aseptic throughout, but the stupor deepened into coma, and the patient died on December 15th with a temperature of 105°.

The *autopsy* showed the presence of a tumor, a gliosarcoma, whose limits were quite distinct from the cerebellar tissue, though it was not encapsulated. (See Fig. 6.)

It lay on the base, and compressed the left hemisphere of the cerebellum, and especially its anterior inferior (ventro-cephalad) surface, and also pressed upon the left half of the pons Varolii at its lateral part. The left crus was slightly indented by the tumor, and the fifth nerve had been flattened out by it without being so pressed upon as to be degenerated. The auditory and facial nerves were also compressed by the lower part of the tumor. (See Fig. 7.)

FIG. 7.



The situation of the tumor was such as to have made it absolutely impossible to reach it by operation, unless, indeed, the certainty of the situation of the tumor had been so complete as to justify full section of the cerebellum. It was almost identical in situation and appearance with a tumor reported by Wollenberg in the *Arch. für Psych.*, xxi. p. 791. Its situation as related to the surface is shown in Fig. 6, which is made by drawing the tumor in one of Alexander Fraser's plates.

CASE III. *Glioma of the cerebellum; characteristic staggering; operation; death.*—A little girl of seven years of age had suffered for a year from severe headache all over the head, but chiefly in the forehead, from severe vomiting, and from gradually advancing blindness, due to

a progressive optic neuritis. For three months before she was seen, it had been difficult for her to walk on account of a tendency to stagger and on account of dizziness, which was undoubtedly due in part to nystagmus, which was observed early in the history. The staggering was very marked, so that during the last month she could not walk without aid. She did not appear to stagger in any one direction constantly, but there was some tendency to fall backward and slightly to the left. She complained at times of earache in the right ear, but there was no evidence of cranial nerve palsy or of hemiplegia.

The diagnosis of cerebellar tumor in this case was quite evident, but the only clue to the position of the tumor was the tendency to stagger backward and to the left. It was thought probable that the tumor was in the vermiform lobe of the cerebellum, more likely upon the right than upon the left side. The absence of cranial nerve symptoms showed that it was not near the base. The operation was therefore undertaken.

Operation. The operation was done by Dr. McBurney on December 29, 1891. Ether narcosis. A horseshoe-shaped incision with the convexity upward was made over the right half of the occipital bone. The upper part of the incision lay a little above the superior curved line of the bone, and the flap, which was then turned down, included all of the soft tissues excepting the periosteum. The base of the flap was left attached to the upper part of the neck.

With chisel and mallet a considerable plate of bone was removed from over the centre of the cerebellar fossa, and the opening was then enlarged with rongeur forceps as much as was safe, having due regard for the venous sinuses. The dura protruded forcibly, but otherwise appeared normal. A large flap of dura was then cut and laid back, revealing only normal cerebellar convolutions. Examination of the sides and under surface of the cerebellum gave no information. A probe was then passed some distance, about one and a half inches, into the brain substance, but no abnormal resistance was encountered.

An aspirating-needle introduced about one-half inch from the median line, and parallel with the base of the skull, entered a cyst from which two drachms of clear serous fluid were withdrawn.

A second introduction of the needle failed to detect the cyst, and it was deemed unwise to make further exploration. The flaps were then replaced, being stitched deeply with catgut and superficially with silk. Hemorrhage during the operation was not troublesome, but before its close the patient showed the effects of shock. She rallied well, however, after rectal stimulation, and on the day following operation seemed about as well as on the day before it; at intervals complaining of headache only. Two days later complaint was made of pain in the ears; the wound was dressed and found to be aseptic. The temperature since operation had remained normal.

On January 4th, six days after operation, vomiting occurred repeatedly, the pulse became very weak, stimulation had no effect, and the patient died suddenly in a convulsion at midnight.

The *autopsy* revealed a large gliosarcoma, 2½ by 2 by 1 inch, which occupied the vermiform lobe of the cerebellum and extended into both hemispheres, chiefly into the right one. It lay just under the superior surface of the cerebellar cortex, but it nowhere reached the surface of the cerebellum. It projected downward, compressing the fourth ven-

tricle. Its consistence was about that of the cerebellum, and in its centre was a cyst which had been evacuated by the aspiration.

Certain comments upon these two cases seem warranted. First: *As to the diagnosis.* It is easy to diagnosticate cerebellar disease—headache, vomiting, vertigo, blindness, and staggering being the symptoms almost uniformly found. It is as yet almost impossible to locate the disease accurately within the cerebellum. In 16 cases out of 20, that is, in four-fifths of all cases recorded, the staggering, when uniformly toward one side, has been away from the lesion; yet in one-fifth of the cases and in several cases of disease in the pons Varolii involving the basal surface of the cerebellum, the staggering has been toward the lesion. From the direction of the staggering alone, therefore, it is impossible to determine exactly the side of the disease. The symptoms of the greatest importance in the location of cerebellar disease appear to be those arising from the involvement of the cranial nerves upon the base. The disease commonly lies upon the side upon which these cranial nerves are affected. Such symptoms are usually due to direct pressure upon nerves on the base. They are sometimes due to displacement of the entire cerebellar axis by indirect pressure from a distance. If the cranial nerve symptoms are on the side away from which the patient staggers, then there appears to be a double probability that the tumor is on the side on which they appear. This was the condition in my first case, and the autopsy proved the truth of the probable diagnosis. The complete absence of cranial nerve palsies indicates that the tumor is not near the base. As staggering only occurs when the vermiform (middle) lobe is invaded by the tumor, its absence would show that the tumor did not lie near the median line.

The localization of disease in the cerebellum being therefore a matter which cannot be positively determined from the symptoms, any effort at its removal must necessarily be tentative. There are many cases reported of tumor of the cerebellum in which it is perfectly evident that an operation would have been successful. In these cases the tumor lay in the posterior fossa directly beneath the bone, was not adherent to the cerebellum, and could have been easily removed. An exploratory operation, therefore, would have succeeded in these cases. In a disease which is necessarily hopeless any means certainly should be used which may offer a possibility of relief. Therefore, in these cases of cerebellar tumor, even though the diagnosis be somewhat uncertain, an exploratory operation seems to be advisable.

Secondly: *The dangers and difficulties attendant upon an operation for cerebellar tumors* are much greater than for tumors of the cerebral hemispheres. The muscular tissues which have to be divided in order to lay bare the occipital bone are thick and richly supplied with blood-

vessels, therefore hemorrhage is free and not easily controlled. After the muscular tissues have been cleared away and the bone laid bare, the bony surface open to operation is exceedingly limited, the sinuses leaving but a small portion of the bone open to the trephine. The part accessible is a triangle, rarely more than two inches in its greatest diameter, on each side of the median line. The opening through the occipital bone gives access to a portion of the posterior inferior surface only of the cerebellum; its anterior inferior surface and the greater part of its superior surface are wholly inaccessible. The fossa in which the cerebellum lies is small and the organ is held down into it tightly by the tentorium; it cannot therefore be freely pressed aside by the exploring finger even in the normal state, and when the intra-cranial contents are increased by a tumor, the pressure in the fossa is so great that the opening of the skull is apt to be followed, as in my first case, by an immediate bulging of the cerebellar tissue, which prevents exploration. It is true that the cutting off of such tissue appears to cause no serious symptoms, yet it cannot be absolutely harmless. The difficulties of the operation are therefore not small.

The records of cases operated upon for cerebellar tumor are by no means encouraging. Up to the present date eleven such cases have been recorded. These are as follows:

CASE I. (Bennett May: *Lancet*, April 16, 1887, i. 768.)—Male, aged seven; suffered in April, 1886, from headache, chiefly frontal, and vomiting; then gradual failure of sight developed, and in July he was nearly blind. In July paralysis of the right sixth nerve was noticed, and the eyes were turned to the left. Optic neuritis was then found in both eyes. At this time the gait became affected; he staggered, and tended to fall backward and to the left. His mind was clear. In August the headache and vomiting became severe, he could not stand, and the head was retracted. In October he had become totally blind and nystagmus had appeared. There was loss of knee-jerk on the right side and general weakness, with great emaciation.

He was then operated upon by Mr. May. The cerebellum was exposed on the right side of the median line, and appeared to be healthy, but bulged, and was felt to be hard at one spot. After incision at this spot a tumor was felt one inch below the surface. This was dug out with the handle of a spoon. It was larger than a pigeon's egg, hard on the surface, caseating at its centre. Hemorrhage was slight, but the child died of shock a few hours afterward.

CASE II. (Horsley: *British Medical Journal*, 1887, i. 865.)—Male, aged eighteen; had suffered from headache, vomiting, optic neuritis, increasing weakness of all his limbs, especially of the left arm and leg, vertigo, and typical staggering gait of cerebellar disease. He also had epileptoid attacks, with turning of the head and eyes to the right. His mental state was good, but he was much emaciated and had been in bed a year. Dr. Bastian made the diagnosis of a tumor involving the right lobe of the cerebellum, and, as a last resort, Mr. Horsley attempted its removal. After trephining, a tubercular tumor was found in the right lobe of the cerebellum and removed. It weighed seven drachms. The patient sank gradually, and died nineteen hours after the operation.

CASE III. (Suckling: *Lancet*, 1887, ii. 656.)—Female, aged twelve; complained of headache and vomiting for eighteen months, then for nine

months of increasing weakness of the right arm and leg, and then for three months of severe frontal pain over the right eye. During the last month she had noticed an inability to turn the eyes to either side, and both double and dim vision. On admission to the hospital the left pupil was found to be larger than the right; there was nystagmus on any attempt at movement of the eyes; there was loss of conjugate motion of eyes to the right, and impairment of motion to the left; there was great impairment of vision, with double optic neuritis. Weakness of right extremities with diminution of knee-jerk, staggering gait with tendency to stagger to the right and to fall forward, and marked tremor of the right arm on any motion, were found. There was a slight paralysis of the left side of the face, but the tongue deviated to the right. Headache, vertigo, and vomiting were very severe and constant. The diagnosis of cerebellar tumor was made, and an operation was considered advisable.

The occipital bone was trephined over the left side and the cerebellum exposed. It bulged out of the wound, and its tissue appeared darker and softer than normal. A part of the cerebellar substance was cut away and the wound was dressed. The patient went into a state of collapse and died of exhaustion in forty-eight hours. The autopsy showed that the glioma had occupied the entire left lobe of the cerebellum and had invaded the middle lobe also.

CASE IV. (Maunsell: *New Zealand Medical Journal*, 1889, ii. 151.)—Male, aged eighteen; had suffered from headache, vomiting, vertigo, and cerebellar ataxia, with reeling to the right. His eyes were very prominent and his vision almost lost on account of advancing optic neuritis. His head and neck were swollen and retracted. He was deaf in the left ear and had lost his sense of smell. His pupils were dilated; he had convulsions in the right arm and leg. He had lost control of the sphincters. He was trephined on the 12th of February, 1889, over the left hemisphere of the cerebellum. An hydatid cyst, four by three inches in size, lying beneath the tentorium, was found and evacuated. He recovered from the operation, but remained in a condition of blindness and deafness.

CASE V. (Maudsley and Fitzgerald: *London Medical Recorder*, June, 1890. Quoted by Knapp.)—Male, aged twenty-eight; suffered from headache, vomiting and vertigo, and staggering gait; optic neuritis had produced blindness, and he was also deaf. There was left facial paralysis and awkwardness of the left side. He was trephined April 20, 1888, over the left lobe of the cerebellum. A solid nodule was found fixed to the bone, but this could not be removed. Much cerebellar tissue escaped from the wound. The patient recovered from the operation, but the blindness and deafness persisted.

CASE VI. (Springthorp and Fitzgerald: *Australian Medical Journal*, November 15, 1890).—Male, aged thirteen; after a blow on the right side of the forehead, suffered from headache, vomiting, uncertain gait, optic atrophy, and convulsions beginning with head and eyes turning to the right. He was trephined over the right lobe of the cerebellum. Glioma of the middle lobe was discovered. Much serous fluid was evacuated. The glioma could not be wholly removed and the patient died of shock.

CASE VII. (Bullard and Bradford: *Boston Med. and Surg. Journ.*, April 30, 1891.)—Female, aged six; suffered from vomiting, vertigo, headache, optic neuritis, cerebellar gait, partial paralysis of the right leg, increasing later to total paralysis of all the limbs, with increase of the reflexes. The operation was undertaken for the removal of the tumor of the cerebellum, but on laying bare the bone a hole was found, over the torcular, opening into the sinus, and hemorrhage from this could not be stopped. The tumor was found at the autopsy.

CASE VIII. (Lampiasi: *Wien. med. Wochenschr.*, May 19, 1889.)—Child, aged two, general symptoms of brain tumor, optic neuritis, exophthalmus, convulsions. Exploratory trephining over the cerebellum. Failure to find the tumor. Death four days later. Tubercle the size of an egg found in the left lobe of the cerebellum.

CASE IX. (Knapp and Bradford: *Journ. of Mental and Nervous Diseases*, January, 1892.)—Male, aged twenty-eight; suffered from headache, vomiting, optic neuritis, blindness, deafness, tenderness in the right temporal region, paræsthesia of the mouth and hands. He was trephined by Dr. Bradford, over the tender spot on the right temple. Nothing was found. A left hemiplegia slowly developed after the operation, and two months later he died. The tumor was found in the left lateral lobe of the cerebellum.

CASE X. (Stewart: Pittsburg *Medical Review*, November, 1892.)—Male, aged thirty-nine; suffered for eight months prior to his operation from headache, vertigo, vomiting, and a staggering gait, with tendency to fall backward. He also developed optic atrophy and great mental dulness.

Finally, he became unable to stand, or even to sit up in bed, on account of his tendency to fall backward. He also had tetanoid spasms of the neck and arms, which were worse upon the right side.

There were no cranial nerve palsies. The diagnosis being made of a tumor of the cerebellum, Dr. Stewart trephined over the left hemisphere. The cerebellum bulged greatly, but appeared to be normal, and a puncture with a hypodermatic needle failed to reveal the existence of a tumor, or of fluid. The wound was closed.

The autopsy, two days later, showed the existence of a large gumma in the right hemisphere of the cerebellum.

CASE XI. Potempski (*Italian Congress, Surgery*, 1892; *Annals of Surgery*, December, 1892) reports a case of supposed cerebellar tumor with characteristic symptoms in which two attempts at removal were made. At the first attempt the cerebellum was trephined on the right side; a large amount of fluid was evacuated, but palpation failed to reveal the tumor. After the wound had healed a second attempt was made by trephining over the left side; again, a considerable amount of fluid escaped, and it was thought that a hard nodule could be felt in the region of the vermiform lobe, but this could not be removed. At the time of the report the second wound had healed, but the patient was still suffering from his original symptoms.

Our own two cases bring the total number of operations for cerebellar tumors up to thirteen.

In six cases the tumor was not found at the operation, and the patient died. In one case the tumor was not found, but the patient lived up to the time of the report. In two cases the tumor was removed, but the patients died. In two cases it was found, but could not be removed, and the patients died. In one case it was found, not removed, but the patient lived. In but one case was the tumor successfully removed.

The percentage of deaths after cerebellar operations thus far has been 77 per cent., while that after cerebral operations has been 51 per cent.

CONCLUSION.—If we combine the results of the cerebral operations with those of the cerebellar operations, we find that the total number of patients operated upon for intra-cranial tumors has been eighty-seven, and that of these, forty, or 46 per cent., have proved successful, the patients recovering.

Experience will, doubtless, result in a more favorable outcome as time goes on, and neither neurologists nor surgeons should be discouraged in their attempts to relieve a formerly fatal disease.

THE PREVENTION AND TREATMENT OF CHOLERA BY THE NAPHTHOLS.

By D. D. Stewart, M.D.,
LECTURER ON CLINICAL MEDICINE, JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA.

AND

BACTERIOLOGICAL REPORT.

By George M. Sternberg, M.D., U.S.A.,
DIRECTOR OF THE HOAGLAND LABORATORY OF BROOKLYN.

In again reverting to what I believe may prove a successful preventive against the development of cholera in the exposed and a remedy for the jugulation of the developed disease, when resorted to in the early stage, it must be stated that, as yet, unfortunately, the *experimentum crucis*, careful clinical trial, has not been possible; these suggestions as to the employment of naphthol resting on theoretic data and test-tube experiment only. It is, however, with the desire to obtain the earlier and wider test of the remedy, which on hypothetical grounds so strongly commends itself to me, and which favorable judgment the subjoined bacteriological report of Dr. Sternberg strongly confirms, that I publish this note.

By analogy, it would appear that the most successful mode of coping with cholera infection—undeveloped or in the early stage of the disease—should be one directed at the *materies morbi* while yet the ailment is local in habitation, before systemic intoxication, the result of absorption of chemical poisons formed by the spirillum, is decidedly manifest. At a later period other indications assume chief preponderance. Then attention should be given less to destruction of the spirillum than to the neutralization of its toxine, and antidoting the often overwhelming systemic effects of this poison.

Apparently the most promising treatment of the early stage of cholera, in the light of modern knowledge of the cause of the disease, should be in the line of intestinal antisepsis, and two plans based on effort for the eradication of the spirillum have been suggested—the mechanical, that of evacuation, which has as its chief advocate George Johnson, and that by the employment of a germicide having a specific bacillary action. There is, I believe, slight doubt that the latter is the more rational, since non-disinfectant evacuants cannot effect more than partial removal of the perhaps incalculable number of spirilla usually present in developed cholera, but few or even one of which remaining is capable of enormous multiplication with a renewal and perhaps aggravation of symptoms. Evacuants, too, such as castor oil and calomel, by aggravating diarrhœa and provoking additional hyperæmia of the affected portion of bowel, should tend, theoretically at least, to favor the advance of the disease.

Despite the continued advocacy of Johnson of the castor-oil treatment, extended unbiased trial in past epidemics by skilled clinicians is so overwhelmingly against its utility that it need be mentioned only to be strongly condemned. Calomel, when used in full doses, combines with its mechanical effect an antiseptic action; but this latter is apparently not exerted to a sufficient extent to render this drug of any special value as a disinfectant. The treatment of cholera by massive doses of calomel was in past epidemics thoroughly tried, and, like that by castor oil, found valueless for the control of the disease. In the recent epidemic abroad reports of its use in moderate, frequently repeated doses were more favorable, at least as regards influence on gastro-intestinal symptoms, but the results obtained were not sufficiently encouraging to justify the abandonment of search for a more efficient remedy.

As the prime indication in the early stage of cholera for the arrest of the disease must be that of prompt and thorough destruction of its specific entity, and the creation of an unfavorable nidus for its subsequent pullulation, various antiseptics have been suggested for this purpose, tried and abandoned. Chief among these is salol. While trial of this remedy was yet premature, and the too sanguine were claiming results, unfortunately subsequently totally unconfirmed,[1] I pointed out certain practical objections to its employment as a germicide in cholera that would probably render it wholly inefficient.[2]

It is obvious, as I have elsewhere stated, that a remedy to be directed with effect against the contagium of cholera should be a more or less ideal intestinal disinfectant—one but slightly soluble and decomposable, yet a germicide in aqueous solution, and both non-toxic and non-irritant in doses amply sufficient to exert a germicidal action. It occurred to me that "hydro"-naphthol, which I was then unaware was an impure beta-naphthol,[3] and which I had used successfully for several years in intestinal disorders of bacterial origin, would perhaps fulfil all the above indications not adequately met by other antiseptics suggested or tried during the height of the Hamburg epidemic, such as salol, naphthalin, carbolic acid, creasote, and creolin. As I have elsewhere stated,[4] I concluded that, in addition to its other valuable properties, as naphthol was related to phenol, belonging to the similar coal-tar group, cholera spirilla

[1] Salol was thoroughly tried in the recent Hamburg epidemic and the consensus of opinion was that, however administered, it was useless as a remedy.

[2] Medical News, September 17, and October 1, 1892. I suggested that as salol is decomposed by the alkaline juices of the bowel in the duodenum or upper jejunum into its components phenol and salicylic acid, which are promptly converted into soluble, *absorbable*, and very questionable germicidal salts, sodium carbolate and salicylate, little undecomposed salol or nascent phenol could reach the lower segment of the ileum.

[3] This has been demonstrated beyond question. See my article on "The Identity of the Proprietary, so-called 'Hydro'-naphthol and Impure Beta-naphthol," Medical News, April 1, 1892.

[4] Medical News, October 1, 1892.

might also be vulnerable to it. It was, moreover, but slightly soluble in water, and was both non-irritant and non-poisonous in quantity much more than sufficient to thoroughly disinfect the bowel against the ordinary putrefactive organisms. It, in addition, does not readily decompose, and would, therefore, be readily carried unchanged, even in moderate doses, to the affected part of the bowel in cholera, without absorption occurring.

These thoughts suggested trial of the germicidal value of naphthol on the cholera spirillum. This was undertaken for me in the laboratory of hygiene of the University of Pennsylvania, by Dr. Ghriskey. A series of experiments made with samples of "hydro"-naphthol (impure beta-naphthol),[1] demonstrated a distinct antiseptic effect in dilutions 1 : 7000 parts nutrient culture medium, and a distinct germicidal action in 1 : 2000 parts within five minutes.

These experiments were made on benign organisms, by long cultivation many generations removed from the virulent spirillum, cultures of the latter not being obtainable in this city. I deemed it especially advisable that the behavior of the so-called hydro- and pure (re-sublimed, medicinal) beta-naphthol, its isomer alpha-naphthol, and one of the salts of beta-naphthol, the benzoate, toward the virulent comma spirillum be ascertained. Dr. Sternberg kindly voluntered to determine this, and has carried out a series of very complete experiments in the Hoagland Laboratory on these. His very satisfactory report, for which I am under great obligation, is as follows:

HOAGLAND LABORATORY, BROOKLYN, N. Y.
February 26, 1893.

D. D. Stewart, M.D., Philadelphia, Pa.:

MY DEAR DOCTOR: In compliance with your request I have made a series of experiments at the Hoagland Laboratory to determine the antiseptic and germicidal value of alpha-naphthol, beta-naphthol, hydro-naphthol, and benzo-naphthol, as regards the cholera spirillum.

My cultures for these experiments are from a case of Asiatic cholera, taken from a Hamburg steamship in the lower bay of New York (in October, 1892), to the hospital at Swinburne Island. The spirillum was isolated by me from the rice-water dejecta of this patient, and both in its morphological and biological character it corresponds with Koch's cultures of his "comma bacillus."

The results obtained are as follows: Alpha-naphthol and beta-naphthol have about the same antiseptic and germicidal value. In the proportion of 1 : 16,000 both prevent the development of the cholera spirillum in peptonized beef-tea, while 1 : 24,000 fails to prevent development. In the proportion of 1 : 3000 both destroy the vitality of the cholera spirillum in bouillon cultures, twenty-four hours old, after two hours contact, while 1 : 4000 fails to destroy this micro-organism in the time mentioned —two hours.

[1] I had desired that similar experiments be made with re-sublimed beta-naphthol, but pressure of laboratory work then prevented.

In experiments made with a solution of 1:1000, added to an equal quantity of a twenty-four hours old bouillon culture—making 1:2000 after mixture—and in which the time of contact varied from five to thirty minutes, alpha-, beta- and hydro-naphthol were found to destroy the cholera germ by fifteen minutes' exposure, but to fail after ten minutes' contact, so that the germicidal value of each of these is similar, or nearly so.

In all these experiments the line was sharply drawn between success and failure. No development occurred and the bouillon remained transparent in those experiments in which the germicidal action was complete, and a characteristic development occurred within twenty-four hours in those experiments in which there was a failure to destroy the spirillum.

Benzo-naphthol has no germicidal power, probably because it is insoluble in water. At least this is my inference from the experiments made. One gramme was added to 1000 c.c. of distilled water, and after vigorous shaking was placed in the steam sterilizer for half an hour. At the end of this time the greater portion, at least, of the benzo-naphthol remained undissolved at the bottom of the flask. The saturated solution (?) was then filtered and added to recent bouillon cultures of the cholera spirillum in the proportion of 1:1, 1:2, 1:4, and 2:1. At the end of two hours sterile bouillon in test-tubes was inoculated from each of these and placed in the incubating oven. At the end of forty-eight hours a characteristic development of the cholera spirillum had occurred in all of the tubes. Very truly yours,

GEORGE M. STERNBERG.

These results must be considered of the greatest importance in view of the fact that we have in cholera, at first, a local intestinal ailment of which many cases might be readily arrested at the onset, could easy, thorough disinfection of the affected part of the bowel be practised. Beta- and alpha-naphthol apparently fulfil all the desired indications. They may, indeed, in this instance, be termed ideal intestinal germicides, neither decomposable nor more than slightly soluble and absorbable, and harmless in doses apparently incomparably more than efficient, both as antiseptic and disinfectant. As one part of either naphthol to sixteen thousand parts of culture medium is sufficient to prevent development of the spirillum, and one part to two thousand is here an efficient bactericide, and as one to sixteen thousand equals but a half-grain to the pint, it would follow that but five grains of naphthol, if in solution, would be required to render the entire small intestine antiseptic against the cholera spirillum, while about forty grains under similar conditions would be germicidal, since the contents of the small intestines, even when thoroughly distended throughout their length—a condition practically never existing—cannot amount to more than ten pints.

As stated elsewhere,[1] despite these calculations, it would be, of course, difficult to accurately formulate the exact dose necessary to create immunity against cholera or that efficient to exert a bactericidal effect in cases of the developed disease. Fortunately, purified preparations of

[1] Medical News, October 1, 1892.

beta- and alpha-naphthol are harmless in any dose possible to be ingested. Though the maximum medicinal dose of beta-naphthol ordinarily necessary is placed at one gramme (15 grains) or, daily, four grammes (one drachm), a much larger quantity than this, if necessary, may with safety be taken. Bouchardat's[1] investigations led him to place the toxic quantity at about 250 grammes (8¾ ounces avoirdupois) for a person weighing sixty-five kilograms (143 pounds avoirdupois) and Maximovitsch considers 585 grammes (20⅝ ounces avoirdupois) of pure alpha-naphthol needful for the same purpose,[2] so that alpha-naphthol is still less toxic than beta-naphthol, if the term poisonous can be properly used for remedies so harmless.[3]

As alpha-naphthol is of disagreeable taste and is said to be somewhat irritating to the mucous membranes in full doses,[4] purified beta-naphthol is to be preferred. The dose of either beta- or alpha-naphthol, as a prophylactic against cholera during exposure, should be one sufficient to promptly antisepticize, to a maximum extent, the whole gastro-intestinal tract—about five to ten grains, three to four times daily, best taken *very finely pulverized*, perhaps with white sugar as the excipient. In early choleraic diarrhœa similar or larger doses may be taken, but at shorter intervals. If thought desirable, combinations may be made with opium or with calomel. In the event of decided gastric irritability preventing the ingestion of naphthol, a prompt and thorough trial of it by Cantani's method of enteroclysis,[5] two, and, if possible, more litres of warmed saturated aqueous solution in a fountain syringe should be gently forced into the bowel by hydrostatic pressure, efforts being made to pass the ileo-cæcal valve[6] and irrigate the lower ileum. Could this procedure be invariably successful in all cases of cholera—and Cantani holds that he has proved that it is possible, even with comparatively small amounts of fluid, to force the valve—it would appear that we probably have in naphthol enteroclysis an almost certain specific for the arrest of cholera, if the injections are resorted to sufficiently early. It

[1] A full account of Prof. Bouchardat's experiments on the antiseptic and physiological effects of beta-naphthol is contained in the Pharmaceutische Rundschau, Feb., 1888.

[2] See Merck's Bulletin, December, 1890, p. 148.

[3] The above shows how misleading and ridiculously untrue is the statement, made for trade purposes by a certain drug manufacturing house, in a pamphlet devoted to the virtues of a proprietary preparation of their own, which is but an unpurified beta-naphthol, that beta-naphthol, even when used externally in the smallest dose, is highly poisonous, causing albuminuria, etc.

[4] In the few cases in which I have recently used alpha-naphthol I have not observed this effect. I have had a delicate girl, aged twelve, with helminthiasis, under doses of gr. xv. to gr. xx. daily, for ten days, without the slightest indication of irritant action on stomach, bowels, or kidney.

[5] See Berlin. klin. Wochenschr., September 12, 1892.

[6] Some valuable experimental points as to the ability to force fluid through the valve of Bauhin and best technique to employ, are given by Hare, Therapeutic Gazette, October, 1892, p. 680, and New York Med. Journ., October 29, 1892, p. 499.

would be essential that the naphthol solution be retained a short time, sufficient for a disinfectant effect to be exerted, which Sternberg's experiments show occurs with comparative promptness in 1 : 2000 parts.[1] With the saturated naphthol solution (about a gramme to the litre, or 1 : 1000), the ordinary ingredients of Cantani's injection may be employed, or, preferably, these minus tannin.[2] The opium and gum arabic should be valuable adjuvants. These will, in addition to other obvious advantages of the opium, tend to allay any bowel irritability which naphthol in full strength might occasion. They will probably permit of a saturated solution being used and a large quantity of fluid being introduced—at least two litres—to insure thorough distention of colon and passage of the ileo-cæcal valve.

Regarding benzo-naphthol, for internal use a very pleasant salt of beta-naphthol and benzoic acid, which was found by Dr. Sternberg to be without disinfectant or antiseptic effects on the cholera spirillum, it must be borne in mind that this, as also betol, or beta-naphthol salicylate, which is similarly without antiseptic power in its combined condition,[3] is susceptible of dissociation into its components in the upper bowel. As a result, active nascent beta-naphthol is liberated. This fact would seem to establish these salts of naphthol, also, as potent remedies in cholera, were there not uncertainty as to the extent with which this decomposition normally occurs in the bowel and the influence of diseased conditions upon it. Should beta-naphthol itself succeed as a remedy in cholera, these salts should be tried, as the more pleasant of ingestion. Obviously nothing could be expected of them by the method of enteroclysis.

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THE INTERNAL TREATMENT OF LUPUS ERYTHEMATOSUS WITH PHOSPHORUS.[4]

By L. Duncan Bulkley, A.M., M.D.,

Professor of Dermatology and Syphilis, New York Post-Graduate Medical School and Hospital; Physician to the New York Skin and Cancer Hospital, etc.

Lupus erythematosus is recognized as one of the most rebellious of the diseases of the skin, and any substantial addition to its therapeutics must be as welcome to others as it has been to the writer.

[1] Dr. Sternberg informs me he has no doubt, from his results with varying strengths, that a proportion 1 : 1000 will destroy the spirillum in five minutes or less. Trial of this strength was not attempted, the method employed rendering it troublesome.

[2] Tannic acid has simply an inhibitory but no germicidal effect on the spirillum, even in 1 per cent. solution. This same effect is produced by naphthol in the proportion 1 : 16,000.

[3] See Therap. Monat., May, 1888.

[4] Read before the Canadian Medical Association, September 21, 1892.

Having employed the treatment about to be recommended for about ten years, and in perhaps fifty cases, I take pleasure in calling attention to the same, feeling confident that, if rightly used, others will find the same excellent results which I have obtained in a considerable proportion of the cases.

Before detailing the method of treatment advocated I will very briefly present a table of the cases which have come under my observation in private practice, and in the clinics of the New York Hospital, the New York Skin and Cancer Hospital, and the clinic of the Post-Graduate Medical School. The records of the cases treated in earlier clinics are not now readily accessible, but would considerably increase the number of the cases.

The number of cases here collected amounts to 97, seen in a total of 20,798 cases of miscellaneous diseases of the skin; in the same number of general cases were seen 73 cases of lupus vulgaris, showing that in New York the affection under consideration is more common than true lupus, with which it is associated in name, without having any other relationship. I do not recall having ever seen the two associated in the same individual, or having seen the one transformed into the other; in specimens of lupus erythematosus which I have had examined by competent authority, the bacillus of lupus has never been found. In one very severe case of lupus erythematosus, which has been under my observation and care for many years, injections of tuberculin were tried faithfully for a long period, in the hands of a colleague, not only with no benefit, but with ultimate injury.

The following table presents the ages and sex of the cases referred to:

TABLE I.—LUPUS ERYTHEMATOSUS.

Ages of patients.	Private practice. 7573 cases.			Public practice. 13,225 cases.			Grand total.
	Male.	Female.	Total.	Male.	Female.	Total.	
1 to 10 years . . .	0	0	0	0	0	0	0
10 " 20 " . . .	1	2	3	1	5	6	9
20 " 30 " . . .	4	11	15	3	18	21	36
30 " 40 " . . .	3	7	10	6	4	10	20
40 " 50 " . . .	3	7	10	2	7	9	19
50 " 60 " . . .	0	7	7	2	1	3	10
Above 60 " . . .	0	1	1	2	0	2	3
Total	11	35	46	16	35	51	97

It is here seen that lupus erythematosus is very much more common among females than among males, the former comprising over 72 per

cent. of the whole; that it did not occur once under the age of ten years; and that over one-third of the cases were observed between the ages of twenty and thirty years.

It may be interesting to present in connection with this the data relating to the cases of lupus vulgaris which occurred in the same number of miscellaneous skin cases, and which are exhibited in the following table:

TABLE II.—LUPUS VULGARIS.

Ages of patients.	Private practice. 7573 cases.			Public practice. 13,225 cases.			Grand total.
	Male.	Female.	Total.	Male.	Female.	Total.	
1 to 10 years . . .	0	1	1	0	1	1	2
10 " 20 " . . .	3	2	5	2	8	10	15
20 " 30 " . . .	2	4	6	3	9	12	18
30 " 40 " . . .	3	4	7	3	3	6	13
40 " 50 " . . .	1	7	8	1	3	4	12
50 " 60 " . . .	2	2	4	0	4	4	8
Over 60 " . . .	1	2	3	2	0	2	5
Total	12	22	34	11	28	39	73

It is unnecessary here to enter at all into the subject of the nature of lupus erythematosus, of which we know so little, or to attempt any consideration of its clinical features, which have been so well presented by many writers, as well as its microscopic anatomy. The cases here analyzed represented various phases and degrees of the eruption, from a relatively small patch of recent origin, to a very extensive and severe eruption of many years' duration. It has never, however, fallen to my lot to see any of the cases of very acute, rapidly developing, multiple, discoid, erythematous lupus, terminating fatally, such as have been described, especially by Kaposi.

One of the most acute and severe cases which I have ever met with has recently been under my care, in a man aged forty-three, in whom within six months a large share of the face was covered with patches of the eruption, developing from small points; this case yielded well to the treatment to be described, with no local remedies, so that within two months there were but few traces of the eruption; although some small patches have still resisted for considerable length of time. In another very acute case, in a girl aged twenty, almost the entire face became covered in a very short time; and in this case, also, the disease was controlled almost at once in the same manner; in two or three months all the active process had disappeared, leaving only depressed and slightly reddened scars; the girl has remained as a servant in the Skin and Cancer Hos-

pital, and continues quite free from the eruption now, for nearly two years, though the face shows still the superficial scars left by the former lesions.

In a number of chronic cases, where the eruption had existed for a long period, even some years, the improvement was also almost as rapid under a free use of the phosphorus; so that, in the light of other experience, and in the sudden checking of the eruption and its rapid subsidence in these acute cases, and the increase of the eruption once or twice when the remedy was stopped, I am quite satisfied that the results were obtained from the treatment, and had not to do with the spontaneous improvement which we sometimes see occurring in this disease.

The longest period during which I have watched a case, is in that of a young woman now under treatment at the age of twenty-five years. She first came under my care some thirteen years ago, when about twelve years of age; the eruption had then been of about two years' duration and affected the nose, ears, and fingers. The disease continued and increased under various forms of treatment, until the phosphorus was used, about ten years ago, when it yielded, and within some months there were only scars left. She then ceased treatment for a while and there was some relapse, which again disappeared under the same treatment. After this she remained well for a number of years, until, being married at nineteen years of age, the eruption reappeared after the birth of her first child, within a year after marriage. She then fell into other hands and received a variety of treatment with a constant increase of the eruption up to the time when she again came under my care some months since; this was the patient already referred to as having received the treatment with tuberculin.

When I again took charge of her there was a very large amount of eruption on the face, ears, and scalp, with many scars left by former lesions and the severe local measures which had been adopted. There were both chronic patches and those of more acute, somewhat inflammatory character, attended with considerable heat and burning. During the past few months she has been under full doses of the phosphorus, with again happy effects. There has been almost immediate cessation of all acute symptoms, and many of the lesions have almost disappeared, there having been no local applications made. Many of the older lesions have also shrunken, and some have completely cicatrized. I have repeatedly shown and lectured upon this patient, and the marked and steady improvement has been strongly commented upon by the physicians attending the Post-Graduate Medical School.

It is not wise to attempt to present data or statistics in regard to the cure of such an eruption by any special line of treatment; we all know how unreliable such statements may be in a special and consultation practice, and I will not attempt it on the present occasion. I may state,

however, that in a very considerable number of cases I have seen the lesions of lupus erythematosus subside and entirely disappear under the treatment proposed, and in a number of instances I have had the patients under observation, in one way or another, for a length of time after treatment.

In reference now to the particular plan of treatment recommended, I wish first to state, that I do not by any means claim priority in the use of phosphorus in lupus erythematosus, for I believe it has been mentioned in some of the older books, and I do not know where I first found the suggestion which led to its employment.

But I have searched in vain in the more recent works for any mention of its use, nor can I recall any suggestions of the same in journal literature, except such as I have myself occasionally thrown out from time to time; these latter, however, do not appear to have attracted attention—indeed, this treatment was mentioned only casually in connection with other subjects. In the light of my experience, therefore, I wish now to bring forward this remedy as a most valuable addition to our internal treatment of this disease, for the therapeutics of lupus erythematosus is certainly far from satisfactory, as may be judged from the meagre presentation of the subject in our recent text-books.

Some considerable care is necessary in employing phosphorus internally, but if it is properly administered and due precautions are exercised, I believe it to be perfectly safe; some of my patients have taken it continuously for months, not only without harm, but in some instances with marked improvement to their general health.

While it is the phosphorus that is of service in the disease under consideration, there is great difference, both in regard to its immediate and later effects, as to the form and method in which it is administered. In my earlier trials with the remedy, I gave it, as is often recommended, in oily solutions, and in the form of pills; but with these I had on several occasions such severe digestive and liver disturbances, and occasionally with violent jaundice, that I was led to adopt wholly the form of administration about to be recommended, and to exercise other precautions, so that now for a number of years past I have had no single instance of disturbance from the remedy which could cause uneasiness.

The form in which I now administer the phosphorus is in a solution, which was first suggested, I believe, by Dr. Ashburton Thompson, primarily for employment in nervous conditions. I give here the formula which I have long used, and which is known in my clinics as "Thompson's solution of phosphorus":

℞.—Phosphorus . . . . . gr. vj.
Absolute alcohol . . . . . ʒxxx.

To be dissolved with the aid of heat and agitation, and then mixed, while still warm, with the following mixture, also warmed:

Glycerin	℥ixss.
Alcohol	℥jss.
Essence peppermint	℥ss.

Each drachm contains $\frac{1}{10}$ grain of phosphorus.

In most cases I begin with fifteen drops, in water, three times daily after meals. It is well to have the water added quickly after the liquid has been dropped out in an empty glass, and the dose should be taken at once, as I believe that the presence of water changes somewhat the state of the free phosphorus: if exposed to the air the phosphorus oxidizes, and the less efficient phosphoric acid is formed. Commonly the dose may be increased by one or two drops daily until thirty are taken three times daily; the dose is then increased more slowly, by one drop every other day, until forty or forty-five are taken each time, and in rare cases, if it agrees, even a larger amount may be given; but seldom have I given as much as sixty drops to a dose. As the disease yields, the dosage is still continued, if well borne, even until the lesions have quite disappeared and superficial cicatrization has taken place.

It is well to watch patients very carefully while taking this remedy, noting the condition of the tongue and of the digestion, and with the least disturbance the drops should be stopped for the time, and proper measures instituted to restore the deranged functions. If there is any constipation or signs of liver disturbance, I always give a mild dose of blue-mass, colocynth, and ipecac, repeated on the second night after; if, then, the bowel discharge has been free and the tongue is not coated, the drops may be resumed at a smaller dose than when stopped, and the amount again increased, yet more slowly and cautiously.

In many instances the greatest benefit will result from the administration of full doses of nitric acid after each meal, well diluted, in the interval of cessation of the drops, say for a week, when they may be returned to as before. This course of nitric acid may be repeated from time to time with advantage.

When there is much heat and flushing in the eruption, it will often be better to give, in place of the nitric acid, the acetate of potassa, in doses of fifteen grains, with the fluid extract of rumex, and nux vomica, well diluted, half an hour before meals, as in acne rosacea. This I have sometimes seen to have a most beneficial effect upon the eruption, and when the phosphorus has seemed to have lost its effect on the lesions, I have observed it to take hold of them strongly after a course of a week or so of the acetate and rumex mixture.

In many instances, however, there has been little or no difficulty in taking the phosphorus when the dose was not pushed too actively, and

some patients have required little or no assistance from the measures mentioned. But I must insist that the remedy here advocated is to be given most carefully, and claim that, when rightly administered, it is harmless and of great benefit to the disease in question.

Knowing so little as we do in regard to the real nature and causation of lupus erythematosus, I cannot attempt any definite explanation of the mode of action of the remedy in this disease. But in my judgment, arguing from the effects of phosphorus in certain nervous conditions, I think we must look for its action through the agency of the nervous system. There are many elements, which I cannot consider now, which point to a probability that the eruption is of angio-neurotic origin, and these are confirmed, in a measure, by the results obtained from phosphorus employed in the method above described.

I have not attempted any consideration of the local treatment of lupus erythematosus, as I wished to present only the single point which has been emphasized in this paper. In many of my cases I have found decided results from the methods commonly described; but their frequent failure to check the spread of the disease has led me to persist in the use of the internal remedy here advocated, which will, I trust, meet with favor also in the hands of my *confrères*.

SYMPHYSIOTOMY; WITH THE REPORT OF A SUCCESSFUL CASE.

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(*Concluded from page* 298.)

In some animals, such as the hedgehog, the mouse, the rabbit, the guinea-pig, and the cow, the symphysis separates normally to a considerable extent during parturition. In women we can infer that occasionally the same takes place when, after an otherwise normal labor, with a large child, we see a looseness of the symphysis occur which disappears in the course of some weeks or months.

Distance Between Ends of Pubic Bones.—Experiments on the cadaver in regard to the possible separation of the pubic bones are not conclusive unless they are performed on women at or near term or short time after delivery, for during pregnancy the ligaments that form the hinges between the pelvic bones become much more mobile than before or later. There is now so large a number of such experiments on record, and the distance has been accurately measured during

delivery after symphysiotomy in so many operations, that this point may be looked upon as definitely settled. If the knee- and hip-joints are kept bent, as they ought to be, and the symphysis is cut, the ends of the bones separate spontaneously 3–4 cm. (1¼–1½ in.). This is due to the elasticity of the sacro-iliac joints; the contraction of the muscles surrounding the pelvis, especially the gluteus maximus; and the weight of the pelvis in front of the sacro-iliac joint and of the lower extremity. By pulling on the iliac bones or pressing the knees outward, this distance can easily be increased to 7 cm. (2¾ in.); and the same distance has been measured during extraction with forceps, without any injury to the sacro-iliac joints. If the separation is carried to 8, 9, or 10 cm. (3⅛–4 in.), one or both joints crack and open.

When the pubic bones separate, the antero-posterior diameter of the pelvis ceases to exist. The gap in front allows the eminence of the anterior parietal bone to enter, which has the same effect as if the diameter became 6–8 mm. (¼-⅜ in.) longer. Besides, the distance from the promontory to the end of the pubic bone increases, the greater the distance becomes between the ends of the bones. It has been found that the increase is about 2 mm. for each centimetre distance between the pubic bones. The maximum safe distance of 7 cm. (2¾ in.) gives, consequently, an elongation of 14 mm. (over ½ inch).

The transverse and oblique diameter, and every line drawn from the centre of the promontory to a point on the anterior half of the ilio-pectineal line, increases from one-quarter to one-half of the distance between the ends of the pubic bones—*i. e.*, at the safe maximum distance of 7 cm., the increase will be 17–35 mm. (¾–1½ in.). Farabeuf has published figures showing that a pelvis which, before the cutting, only admitted a circle of 6 cm., after the separation admits one of 8.4 cm.; and one which before the operation only admitted a circle of 8 cm., admits after the operation one of 9.8 cm.

Zweifel examined the sacro-iliac joints after symphysiotomy in a case with a diagonal conjugate of 10 cm. (4 in.), external conjugate 17 cm. (6¾ in.), normal lateral measures, and a distance of 6.5 cm. (2½ in.) during traction, and found them very mobile, but in close contact.

Sometimes the joints have even stood a greater interpubic separation than 7 cm., as in a case of Caruso, with external conjugate 17.5 cm. (6⅞ in.), diagonal conjugate 8.5 cm. (3⅓ in.), estimated true conjugate 7 cm. (2¾ in.); child 3000 grammes (6 1/16 lbs.). In this case, which was entirely successful, the distance was 8.5–9 cm. (3¼–3½ in.) during the passage of the head by manual extraction in knee presentation.

Pinard has three times seen a tear in the vestibule and the vagina, which in one case, at least, communicated with the wound, but they healed easily without suture.

Even in a man there has been obtained a distance between the ends of the pubic bones of 42 mm. (1⅝ in.).[1]

INDICATIONS AND LIMITS.—Symphysiotomy is indicated in the flat pelvis with a true conjugate ranging between 67 and 88 mm. (2⅝–3½ in.), but it is difficult below 70 mm. (2¾ in.).

On the other hand, normal birth, forceps, or version is possible down to a true conjugate of 2¾ in. (7 cm.), if the child is small and the head is easily moulded; but both forceps and version give, in general, disastrous results with a conjugate below 3¼ in. (8.5 cm.).

There is a great mortality for both mother and child, and if the child survive, there is danger of its being idiotic. *The safe and proper field for symphysiotomy with flat pelvis lies, therefore, between 2¾ and 3¼ inches.*

Theoretically the lower limit is found by considering that the distance between the centre of the promontory and the end of the pubic bone is elongated 14 mm.; that the head enters between the bones to a distance of 6–8 mm. which together makes 20–22 mm. (¾–⅞ in.); that the biparietal diameter of the fœtal head is 95 mm. (3¾ in.), which may be reduced to 88 mm. (3½ in.), and that, consequently, by subtracting 21 from 88 and 95, the operation is difficult at 67 mm. (2¾ in.), easy at 47 mm. (3 in.).

In the generally contracted pelvis I think it would even be proper to place the upper limit at 10 cm. (4 in.) c. v.

Lepage has performed the operation in the case of a tumor partly obliterating the cavity of the pelvis. This is proper with an exostosis or a pedunculated fibroid that cannot be pushed out of the way. With an ovarian cyst tapping is preferable.

Jewett operated on a patient in whom all else was obviously ample, but whose outlet was narrowed from side to side, the bisischial distance measuring about 3 inches.

Michael[2] proposes, as it would seem on good grounds, to perform the operation in mento-posterior face presentations, in which the chin cannot be rotated forward.

EXAMINATION OF PELVIS.—It appears from the above, that the first condition for a rational decision as to the propriety of performing symphysiotomy is the accurate measurement of the pelvis. In Maternity Hospital the three outer measures, the distance between the anterior superior spines, between the crests, and between the depression between the sacrum and the spinous process of the fifth lumbar vertebra on one side and the upper end of the symphysis pubis on the other, are taken in every case. This would hardly be allowed in private practice, but as soon as a tedious opening of the os or any other circumstance makes it

[1] Albarran: Med. Weekly, January 20, 1893.

[2] J. Edwin Michael, of Baltimore, Md., Journ. Obst., Feb., 1893, vol. xxvii. p. 188.

probable that there is a disproportion between the presenting part and the superior strait, such an examination ought to be made and followed by internal pelvimetry with the hand. It is not difficult to do this; the necessary instrument is portable and inexpensive, and ought to be found in the satchel of every obstetrician.

If we find a diagonal conjugate of 80–92 mm. (3¼–3¾ in.) the probability is that symphysiotomy may be called for.

Fig. 6.

Cadaver of a woman at the end of pregnancy, the abdomen opened with a crucial incision. (William Hunter's *Gravid Uterus*, republished by the Sydenham Society, London, 1851, Plate I.)

The reduction of the diagonal conjugate, which we can measure directly, to the true conjugate is a rather delicate computation. How much is to be deducted from the first, in order to find the latter, depends on three factors: the height of the pubis, the inclination of the pubis, and the elevation of the promontory. The height of the pubis can be measured directly with the finger in the vagina; the two other points can only be estimated according to inspection and palpation. Spiegelberg found by actual measurement in autopsies on puerperæ, that the amount to be deducted varied from 1 to 3 cm. (½ to 1¼ in.). He gives

the practical rule to deduct 1.5 cm. ($\frac{6}{8}$ in.) when the symphysis is 4 cm. ($1\frac{6}{8}$ in.) or less, and to deduct 2 cm. ($\frac{7}{8}$ in.) when the symphysis is more than 4 cm. high. Mangiagalli has found, by exact measurement of a hundred pelves, that one is least exposed to commit an error by subtracting not less than 12 mm. ($\frac{1}{2}$ in.) nor more than 15 mm. ($\frac{6}{8}$ in.).

After having measured the pelvis the mobility of the sacro-iliac articulations must be tried by alternately extending and flexing the extremity and abducting the bent knee. The gait of the patient and her history may also give valuable information on this point.

Fig. 7.

Same body as in Fig. 6, after the removal of the ossa pubis and the muscles and integuments that cover them. The upper part of the labia majora and minora and the extremity of the clitoris are cut off. At either side of the root of the clitoris are seen the crus and erector clitoridis. These lie more horizontally than in the natural state, the ossa pubis, etc., which suspend them, being removed, and they are stretched, from the bones of the pelvis being drawn a little asunder. Above the clitoris appears the upper part of the bladder, which was compressed between the womb containing the child's head and the united ossa pubis.

If the cervix is not dilated or dilatable, Barnes' bags should be used. If the waters are broken and the head presents, moderate traction should be made with the forceps before performing symphysiotomy.

Fig 6 shows the thick layer of adipose tissue under the skin, above the symphysis.

Fig 7 is very instructive in regard to the whole field of operation as it appeared in my case with the long incision. Among other things, we notice the edge of the peritoneum where it ascends from the bladder

to the abdominal muscles. The distance from this line to the root of the clitoris measures 55 mm. (2¼ in.)

This time symphysiotomy has come to stay. All pleading in its favor is superfluous. But many details in the operation must be discussed before we can arrive at the best *modus operandi*, which probably may have to be different in different cases.

Modus Operandi.—Three assistants are required, one of whom gives the anæsthetic, the other two stand each on one side of the patient holding the knees and assisting at the wound.

Morisani operates with the patient placed across the bed. This is only possible with his very simple method of operating. For those who favor the long incision, and in view of the fact that nobody can know beforehand how much hemorrhage there will be and what other complications may arise, the removal to a table, as in all other serious operations, is necessary or desirable.

The operator sits on a chair, between the legs of the patient. During the first incision the legs may hang down over the end of the table or lie stretched out on the table, but during the incision of the symphysis the legs should be held bent in hip- and in knee-joint, moderately separated and with the feet high; and as this position is just as good for the incision of the skin and subcutaneous tissue, it is simpler to place the patient in this position at the beginning. Some have used leg-holders; on obstetrical grounds it seems, however, preferable to have them held by assistants so as to be able to have the angle between thigh and pelvis changed according to the requirements of the case.

Considerable interest attaches to the question about the place and the length of the first incision. It may be short, medium, or long; it may be below, above, or in front of the symphysis.

In 1833 Imbert, of Lyons, recommended to introduce a probe-pointed bistoury from the vestibule, on the flat, push it up behind the symphysis, turn the edge against the symphysis and cut through the latter from behind forward, avoiding to cut the skin.

In 1841 Carbonai, of Florence, made a small transverse incision sixteen lines above the symphysis, introduced a bistoury from above downward and cut from behind forward.

Morisani makes a longitudinal incision 3 cm. (1¼ in.) long in the median line, ending 1 or 2 cm. (½–¾ in.) above the symphysis. Hirst followed exactly Morisani's description. Jewett carried an incision of the same length down to the upper end of the symphysis.

Porak made an incision 5–6 cm. (2–2¼ in.), and laid the whole symphysis bare.

The small incision of Morisani, placed far away from the exit for the lochial discharge, has great advantage for protecting the wound against

infection, but if there came a hemorrhage, as in my case and those of several other operators, it could not be attended to.

Most of the latest operators (Pinard, Leopold, Zweifel, Caruso, and myself) have made the incision 8 to 10 cm. (3 to 4 inches) long, beginning at the upper end of, or somewhat above the symphysis, and ending at the root of the clitoris or deviating to the left of the same.

This large incision extending down into the vulva has the drawback that the wound cannot be dressed strictly antiseptically, but it offers the immense advantage that the operator can see all he does, and can check hemorrhage in the most effective way. On the other hand, Morisani will probably be less exposed to hemorrhage.

Morisani recommends to cut sideways into the recti muscles, deep enough to make room for the index finger. This has been followed by several of the new operators (Caruso, Leopold, Zweifel, Hirst). Porak "detached the triangular ligament from its median insertions," which probably amounts to the same.

In my opinion this transverse incision is not necessary, and weakens the abdominal wall. If anything is wanted behind the symphysis, Hay's director (Fig. 2, *a*, p. 292) has a curvature that just fits to the posterior surface of the symphysis. Its median groove will serve as a guide for the bistoury, and its width will protect the bladder effectively. Törngren's plan of guiding the instruments with a finger in the vagina would seem to be a good one. Truzzi advises, in order to protect the bladder, to tampon with gauze wrung out of creolin emulsion, before cutting the symphysis.

It has been said by the older opponents of the operation that the symphysis may have such an abnormal position that it cannot be found, and several times "a piece of the os pubis has been sliced off." How operators have done this, unless they used a saw, I cannot understand, and even if the separation was made in the bone instead of the cartilage, that need not produce caries with our modern wound treatment. But I cannot see under what circumstances the symphysis could be missed, if the operator bears in mind that it has a distinct notch both at the upper and particularly at the lower end.

The clitoris is inserted midway between the upper and lower end, and the meatus urinarius is situated just below the lower end.

After having made his longitudinal and transverse incisions, and introduced the finger down to the lower end of the symphysis, Morisani introduces *Galbiati's falcetta* (Fig. 2, *c*), and cuts from behind forward and from below upward. To cut from behind has the advantage that we go away from the bladder; but suppose the head is more or less engaged in the pelvis, then the bladder may be so squeezed between the symphysis and the head, that it is impossible to find room for finger and falcetta (Fig. 8). In such a case we would, of course, try to have the

child lifted, which even may be necessary, when the head is above the brim, as appears from Fig. 9, where the uterus forms a pouch descending in front of the symphysis.

But if it cannot be moved, it would be safer to cut from the front backwards, using great care when we got through the cartilage, and in severing the ligaments forming the symphysis behind. We have also seen in the beginning of this paper that the symphysis is much broader in front than behind, so that it sometimes only can be cut from the front.

FIG. 8.

Part of Braune's Plate C. Longitudinal cut through the middle line of the frozen body of a woman who died in the second stage of labor.

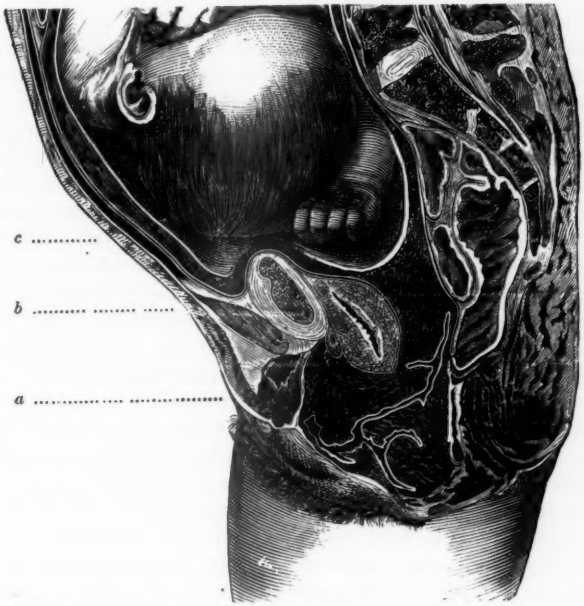
Morisani states likewise that he more than once has used a short probe-pointed bistoury, and cut the joint from the front backward.

To cut from below upward can hardly have any advantage. The urethra is easily held aside, and since the only serious hemorrhage that has ever occurred has always been at the lower end, it is best to leave this part of the incision to the last.

Leopold advises, in order to avoid hemorrhage, not to cut the subpubic ligament, and says that it is not even necessary to cut the whole symphysis, as a cut through the upper half, or three-fourths, allows the bones to separate 3 cm. (1¼ inches). He says, also, that in his second case

he did not cut the ligament, but since he had a separation measuring 6.5 cm. (2½ inches), it is certain that it must have been severed, whether he cut it or tore it. Zweifel had to cut all, since severance of the upper half of the symphysis only gave a separation of 1 cm. (½ inch) between the ends of the bones, and Freund found the same after cutting the whole symphysis down to the ligament. Von Velits cut the upper three-fourths, and Törngren the whole symphysis, saving the ligament, but in both

FIG. 9.



Longitudinal cut through the middle line of the frozen cadaver of a woman at term. (Braune, Pl. B.) The cut having fallen a little to the right, the cervical canal, the urethra, and part of the bladder are not visible, but we see so much the better the spongy tissue forming the crus clitoridis (*a*). A large vein lies in the fat at the lower end of the symphysis (*b*), and another is seen in front of it. The uterus is relaxed, and forms a pouch (*c*) filled with liquor amnii in front of the symphysis.

cases all tore. Farabeuf cut the symphysis of a pelvis that had been for several months in the dissecting-room, through the upper three-fourths, and found the remaining fourth and the subpubic ligament strong enough to support a weight of thirty kilogrammes. It may, therefore, be taken for settled that the *whole symphysis, inclusive of the subpubic ligament, shall be cut.*

According to Morisani, the instrument used for this incision is the

falcetta (Fig. 2, *c*), and Hirst, who first thought that a common probe-pointed curved bistoury would serve his purpose, quickly laid it aside and was glad to avail himself of Galbiati's knife. This sickle-shaped instrument is introduced alongside of the left index finger, which is held against the posterior surface of the symphysis, down to the pubic arch. When the point has passed this, the handle is gradually pulled upward and forward.

The figure represents the knife in its original condition. Since the introduction of strict antisepsis it is made of one piece of steel, without any furrows, and hollowed out on the side of the handle.

I did not find any difficulty whatever in using such an ordinary bistoury, and, as will be seen in Fig. 2, it was a very small instrument compared with Galbiati's. Jewett succeeded, likewise, with "a strong probe-pointed bistoury." For those who make Morisani's incision, I think the falcetta will prove the best instrument in most cases, but for those who prefer the long incision it is superfluous. A concave probe-pointed bistoury, for cutting from behind, and a convex scalpel, for cases in which the cut must be made from the front backward, are all the knives needed for cutting the symphysis. We have above seen that under some circumstances this may even be done in order not to wound the bladder. It would also be indicated when the symphysis forms a zigzag line, as in the pelvis represented in Fig. 1.

Siebold found a synostosis, instead of a synchondrosis, and Velpeau has found the same twice. For this eventuality it is necessary to provide a chain-saw. Stolz recommended, even, always to saw the bone a little to one side of the cartilage. He introduced the saw by attaching it to a slightly curved needle, which he introduced through a small transverse opening on the mons Veneris, and pushed out between the crus of the clitoris and the descending ramus of the pubes. It would perhaps be better, in cases where bone has to be cut, to use chisel and mallet, as Albarran did, and as is used by other surgeons in operations on the joints. McKennan, of Paris, Ill., could not cut the symphysis with a strong probe-pointed bistoury, but severed it by means of a narrow probe-pointed metacarpal saw.

The urethra is protected against injury by being held over to the right side by means of a long metal catheter, which at the same time serves to keep the bladder empty.

The bladder and the vagina are guarded by the finger held behind the symphysis, or by passing a director. In some cases there will, as stated above, not be room for either. The bladder in the case represented in Fig. 8 was so compressed between the symphysis and the head that the tissue could hardly be seen in the cadaver. I think the bladder might also occasionally be caught between the ends of the pubic bones, when they are brought together at the end of the operation.

This viscus contracts in two different ways. Either the fundus falls down on the base so that, together with the urethra, it forms a Y, or the posterior wall is pressed against the anterior, as in Fig. 9, so that the canal is more like a C. In the latter event it rises, of course, higher up. During parturition it is even in part pushed and drawn up above the top of the pubis, as seen in Fig. 8. It is therefore clear that in certain symphysiotomies it must be in great danger of being wounded, and I cannot agree with Caruso, who lays the blame for such an accident, as well as for an abnormal puerperium following the operation, on the operator.

The vagina may also be wounded or caught between the bones, but even if a vesico-vaginal fistula should occur, the evil is not great. Several times it has healed spontaneously, and in one case Morisani closed it by a subsequent operation.

The sacro-iliac joints must also be borne in mind. Müllerheim advises to surround the pelvis with a thick rubber tube immediately after cutting the cartilage. Zweifel tried it, but found that it slipped up. It is better to have the assistants press moderately on the trochanters, and in this way prevent too great a strain on these articulations. The soft parts should be held apart during extraction, and the distance between the ends of the pubic bones measured exactly. It is also in the interest of these joints to leave the birth of the child to Nature after cutting the symphysis, but we shall presently see that there are serious objections to this plan.

If it is necessary to guard against injury to the sacro-iliac joints of the mother, it is, on the other hand, often necessary, in order to make room for the child, to lessen the pressure on the trochanters, or even to *press on the bent knees or pull on the ilium.* When we see how often the child has been delivered in an asphyctic condition, and take the cases into consideration in which it died, this side of the operation does not seem hitherto to have received the attention it deserves. Pinard has lost two children from fracture of the skull; the first delivered by manual extraction of the aftercoming head, the second by forceps applied to the presenting head. The ends of the bones should be held apart at least 1½ inches (4 cm.), and more if delivery meets with difficulty. We know that a distance of 2¾ inches (7 cm.) is perfectly safe, and that we may even succeed with a greater separation. To use the child as dilator increases its danger very much, without corresponding advantage to the mother.

Pinard has constructed a special "écarteur régistreur," an instrument which he inserts between the pubic bones, and on which he can read the distance between them.

When the symphysis has been separated the wound should be stuffed

with gauze, impregnated with some antiseptic substance. Creolin ought, perhaps, to be preferred on account of its hæmostatic properties.

A point of great importance to settle is the question in what way, if any, labor shall be furthered beyond cutting the symphysis. Morisani leaves the case to Nature if the pains are good, and looks upon this as one of the reasons why modern operations have been more successful than the old. But in about one case out of four, traction with *forceps* has been found necessary to complete delivery. In my case there were no labor pains at all, so that some intervention was necessary. Perhaps, sometimes, the waters may be broken and the head pushed down from above, and then seized by forceps or shelled out by pressure through the rectum (Freund, Jewett). Our child was in a precarious condition, as shown by the meconium in the liquor amnii, before any mode of delivery was attempted, and it is doubtful whether a high forceps operation could have been performed more expeditiously than turning, and would have saved its life.

The fact that several operators have met with considerable hemorrhage makes me think it safer to deliver. It is also an advantage to do so while the patient is anæsthetized. But the opinion of a man with Morisani's experience must, of course, as yet have much weight.

Morisani does not mention *version* at all. I think, if we decide to deliver artificially, the common rules ought to be followed: forceps for engaged head, turning for head movable above brim. In Harris's last list of forty-four cases version was performed four times with presenting head, saving all mothers, and all children born alive (in one of induced labor it died on the third day).

Under rare circumstances, even other operations may become necessary now, just as they did in former years, such as embryotomy of the dead child, or even Cæsarean section in case it is living and cannot be delivered *per vias naturales*.

It is quite remarkable how often the child is born *asphyctic*. Everything needed for its revival should, therefore, be prepared beforehand.

Müllerheim (Freund's assistant) is the only one who mentions "rather considerable *hemorrhage*" from the incision of the soft parts, but several operators (Leopold, Zweifel, Törngren, Porak, beside myself) have met with more or less serious bleeding at the lower end of the symphysis. Dr. Stewart has told me he found in a dissection, made shortly after my operation, a large vein running just behind the symphysis, and we know that the dorsal vein of the clitoris goes below the subpubic ligament, and is connected with the obturator vein of the same side by a considerable branch, which ascends on the back of the pubis toward the thyroid foramen.[1] At the lower end, both behind and in front of the symphysis,

[1] Quain's Anatomy, 9th ed., 1882, vol. i. pp. 523, 524.

there is a spongy tissue full of veins, some of which can be seen in Fig. 9.

That this hemorrhage ought not to be left unheeded appears from Freund's case, in which a large hæmatoma formed in the right labium majus, suppurated, and opened into the vagina behind the right pubic bone. In my case three arteries had to be tied. Törngren checked his bleeding by deep sutures through all tissue in front of the symphysis, and an iodoform gauze tampon in the vagina. Zweifel found pressure-forceps and ligatures insufficient, and had to carry a ligature with needle deep into the tissue, guiding the needle from the vagina. This had to be done on both sides. He thinks the bleeding came from the corpora cavernosa of the clitoris being torn apart. Leopold ascribes likewise his hemorrhage to the corpus cavernosum.

In my case the placenta followed the extraction of the child immediately. If it did not come soon, say within a quarter of an hour or twenty minutes, it would be better to loosen it artificially before closing the wound.

After the birth of the child and the removal of the placenta, the bones should be brought together by pressing on the trochanters. Leopold inserted three silk sutures through the cartilage. Zweifel used four threads of silkworm-gut with a needle at both ends. I put them only through the fibrous tissue covering the bone in front; but I think this whole use of buried sutures is superfluous. All that is needed is to carry the deep sutures through the skin, adipose and fibrous tissue down to the bone, and take in about ¼ to ½ inch of the latter on either side. When all are in place, the trochanters are pressed together, *taking particular care to ascertain that the bladder and the vagina do not get in between the ends of the bones*, and all the sutures are drawn tight and closed from above downward. One or more superficial sutures may be needed for a perfect adaptation of the edges. Silk answers every purpose. Silkworm-gut is rather short; silver wire causes more pain in being removed.

The whole wound is closed without providing for any drainage, which can always be done later if there should arise suppuration in the depth of the wound.

Porak removed the sutures already on the sixth day; I partially on the sixth and partially on the ninth day; Pinard on the eighth; Von Velits on the fourteenth day, and Leopold on the seventeenth day.

The chief way in which the bones are kept together is by means of pressure on the trochanters. Pinard has gone so far as to construct a special bed for this purpose with hollow cushions fitting the trochanters! or places the patient in Bonnet's gouttière. Freund and Törngren used Esmarch's tube. If elastic pressure is wanted, Martin's roller bandage of solid rubber would seem more appropriate. Jewett used a

firm muslin binder. Morisani recommends a bandage painted with water-glass; Pinard used plaster-of-Paris; Freund a starched bandage lined with cotton. Many (Zweifel, Von Velits, Leopold, Morisani) have used a strap with buckles. The best of all, I think, is our excellent rubber adhesive plaster as used by Hirst, Michael, and myself. It insures absolute contact, is waterproof, and preserves the patient from pain in being moved. While my patient did not suffer at all, in several histories (Zweifel, Von Velits, Freund) we read of considerable pain necessitating a change of bandaging. Zweifel declares an apparatus for suspending the patient (Krankenschwebe) to be almost a necessity. In my case the patient had to be lifted on the bedpan every three hours, on account of the vaginal injections, but it did not hurt her.

In a case of Galbiati's there was a fibro-cartilaginous union four lines wide. Such accidents may have had something to do with the observations made in former years of women who had been symphysiotomized and later gave birth to children without the intervention of the obstetrical art. Even in one of the modern cases (Freund) a small cleft was left, but that did not prevent the patient from doing even the heaviest work.

The patient should lie with outstretched legs, not bent over a roll, as this straight position in itself brings the ends of the pubic bones together, and the knees should be prevented from separating so much that it has any influence on the symphysis.

We do not know how long cartilage takes to heal, and experiments on animals are therefore desirable, and have been promised by an assistant in one of the German clinics. Von Velits found on the twenty-first day an enormous callus which made the symphysis 5 cm. (2 inches) thick. In all other cases there seems, as in mine, to have been linear union without any appreciable enlargement, just as a cut heals by first intention in skin and muscles. Experiments by Redfern and others have shown that the cells in the cartilage multiply at the expense of the hyaline substance and form a cicatrix of connective tissue that slowly undergoes a retrograde metamorphosis.[1]

This lack of an accurate pathological basis explains the great diversity in the time patients have been kept in bed. Porak says the symphysis was solid in his case on the seventh day; on the thirty-fifth day there was yet a greater mobility of this articulation than ordinarily, but she walked perfectly. Several patients in Harris's list were allowed to get up eight to ten days after the operation. On the other hand, Corradi says the bones unite in thirty to forty days, and Morisani gives two to four weeks as the limits. Pinard had a case of rupture of the symphysis with a diastasis of two fingerbreadths. Without the use of any

[1] Billroth: Allgemeine chirurgische Pathologie und Therapie, Berlin, 1866, p. 73.

kind of bandage the patient could walk in six weeks as well as before. Pinard and Porak kept their patients in bed until the twentieth day; Freund's got up on the twenty-first day, and could go up and down stairs on the twenty-ninth day; Von Velits's got up on the twenty-second and left the hospital on the twenty-sixth day; Leopold's left the bed on the twenty-fourth day and walked easily on the thirtieth. Novi keeps his patients in bed forty to fifty days.[1]

In my own case there was found perfect union on the twentieth day, and it had perhaps already been there for some time. Leopold could move the legs of his patient on the seventeenth day without causing pain. At all events it seems to be safe to *let the patients get up by the end of three weeks, and they may, as a rule, be dismissed at the end of a month.*

If there are no complications there is no necessity for any special diet.

In Porak's case the urine contained a little pus and the patient suffered from incontinence for four days. In others the urine had to be drawn with catheter. My patient used the bedpan without any difficulty.

The bowels should be kept open as in any other puerperal case. Great attention must be paid to cleanliness, which may be difficult. We have seen that Pinard places the patient in a gouttière, a wire cuirass that allows of the patient being hoisted up and washed after defecation. The same can be obtained by a mechanical bed, lying on straps attached to a frame which is raised from the mattress by a crank, cog-wheels, and racks. Some turn the patient on the side from the very beginning, and loosen the strap around her pelvis; but this causes pain and is apt to interfere with healing. In this respect the broad straps of rubber adhesive plaster which I used proved very satisfactory. The patient was seized around the trochanters, lifted up, the bedpan was pushed in under her as often as required, the draw-sheet was changed every day and she was washed and wiped without causing any pain and without disturbing the contact of the severed bones.

Prognosis.—If the operation is held within proper limits, and properly performed, and especially if the strictest antisepsis has been observed from the moment the patient was taken in labor, there is no danger for her life in the operation itself. Perfect union takes place between the bones. The patient's gait will be normal, and she will have the same strength as before. There is some danger of the bladder or the vagina, or both, being wounded, but this is a rare event. If a vesico-vaginal fistula forms, it will in most cases close spontaneously by mere cleanliness. If not, it can be closed by a second operation.

[1] Charpentier: Centralbl. f. Gynäk., January 14, 1893, p. 37.

For the child the danger is considerably greater, but yet small. The former great mortality was due to the performance of the operation in too narrow pelves, to the use of version, and to the too early extraction of the child, before the cervix was sufficiently dilated. By leaving the labor to Nature and by using forceps, a great reduction of mortality both for mother and child took place. But in Harris's last list we have yet five children lost, and many have evidently had a narrow escape. Sometimes, as in Jewett's case, the loss of the child has been due to delay before the operation, but in others (Pinard) the skull has been fractured, whether the child was extracted by forceps or by hand, and in reading the histories we very frequently find it reported that the child was born asphyctic.

Relation to Other Operations.—By the adoption of symphysiotomy a complete revision of the indications for other obstetric operations has become necessary. As to *craniotomy* on the living child, an operation which has already been denounced from many sides since the comparatively good results of the improved Cæsarean section, it will fortunately vanish altogether from our list of resources, since, with symphysiotomy at our command, it would be outright murder to kill the child in the uterus, except it be a hydrocephalus or a monster, and since the operation, even with very skilful treatment, is accompanied by a mortality of 5.6 per cent.[1]

Induction of premature labor will be much restricted. The statistics of this operation, even with strict antisepsis, showing a maternal mortality of 5.3 per cent., and an infantile mortality of 45.3[2] per cent., what chance has it to survive in the struggle for existence with an operation that promises to entail hardly any loss of mothers and less than 10 per cent. among the children?

The *improved Cæsarean section* holds its own when the conjugate is below 2¾ inches (7 cm.), and other special circumstances, such as obstruction in the soft parts, obtain, but the many operations performed of late years, with a longer conjugate, ought not to be repeated, since even in the hands of a Leopold, and in the most favorable surroundings, this operation is accompanied by a mortality of 8 per cent. of the mothers,[3] and since 135 consecutive cases by different operators gave a mortality of nearly 26 per cent. among the mothers, and over 8 per cent. among the children.[4]

In some cases of successful symphysiotomy the patient has been for days in labor (two days, Caruso; three days, Morisani; four days, Postiglione; and even six days, Freund). Under such circumstances it is

[1] Wyder: Archiv für Gynäk., 1888, vol. xxxii. p. 60.
[2] Wyder: Ibid., p. 76.
[3] Leopold: Ibid., 1889, vol. xxxiv. p. 313.
[4] Caruso: Ibid, 1883, vol. xxxiii. p. 255.

not likely that anybody would feel tempted to perform Cæsarean section. These cases would be looked upon as requiring *Porro's operation*, which has a mortality of nearly 57 per cent. for the mother.[1]

Morisani recommends to try the *forceps* before performing symphysiotomy, but the operator ought not to use much force. If he succeeds he may extract a dead child, or one with a fractured skull or internal hemorrhages, that dies within a few days, or survives to be an idiot; besides that, the bruising of the maternal tissues endangers the mother's life or makes her speedy recovery doubtful. With a true conjugate between $2\frac{3}{4}$ and 3 inches (7–7.5 cm.), it is better to perform symphysiotomy at once.

The same dangers surround *version* in a contracted pelvis. In cases in which this operation is indicated we should rather perform symphysiotomy up to the upper limit of that operation, $3\frac{1}{2}$ inches.

Symphysiotomy has been performed *for the second time*, on the same woman, in five case, and every time with success.

Although we have seen that symphysiotomy has been performed successfully after the woman had been long in labor, we should not voluntarily delay the operation. Now that we know its limits and know how good the prognosis is, we ought to insist on its performance as soon as labor is sufficiently advanced. After that, delay causes only unnecessary pain and uneasiness to the mother, adds to her danger of sepsis, and threatens the child's life.

We have all the time spoken of the measurements of the pelvis, but it is evident that if the pelvis is normal and the child too large, the difficulty will be just the same, only it requires a good deal more experience and judgment on the part of the obstetrician to see the indication. By placing the index finger in the vagina and seizing the head with the thumb and finger of the other hand above the symphysis, an experienced accoucheur can form a pretty accurate idea of its size. At the same time he will examine the size of the fontanelles and the width of the sutures, and thus be enabled to judge of its compressibility.

Those who have followed me through this, as I hope, dispassionate essay, in which I have tried to keep as far away from reckless enthusiasm as from pusillanimous distrust, will have seen that the indications for symphysiotomy can only be based upon exact pelvimetry; that it may be a very easy and a particularly difficult operation; and that it by no means can be foreseen in what way the operation is to be performed, or if other operations have to be added or substituted. It is, therefore, an operation which ought not to be undertaken by anybody who is not familiar with the way of measuring a pelvis or judging of the size and of other peculiarities of a child *in utero*, who has not the necessary

[1] Lebedeff: Archiv f. Gynäk., 1887, vol. xxxi. p. 237.

instruments for this and other operations, and who is not capable of performing all other obstetric operations, inclusive of Cæsarean section and Porro's operation.

The year 1892 has been a remarkable year for symphysiotomy. Not only has it spread over the world, not only have twenty-six operations been performed by fifteen operators without a maternal death, but the more than a century old operation has even had offspring. Two children have been born to it. One is *ischio-pubiotomy*, proposed by Farabeuf and performed successfully by Pinard for an obliquely contracted pelvis, the operation consisting in cutting with a chain-saw the horizontal ramus of the pubes of the narrow side 5 cm. (2 in.) from the symphysis, and the corresponding place where the descending ramus of the pubis and the ascending ramus of the ischium meet, and thus taking advantage of the two pelvic hinges left movable, the symphysis pubis and the sacro-iliac joint of the other side.[1] The other is the case of symphysiotomy in a man referred to above.

But don't let us become bewildered, and don't let us be ungrateful. There is one country and one man to whom we owe symphysiotomy. Italy never gave it up, and Morisani preached its value for many years to deaf ears. In making this man an honorary Fellow, the American Gynecological Society has honored itself.

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MOVABLE KIDNEY; WITH A REPORT OF TWELVE CASES TREATED BY NEPHRORRHAPHY.

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(*Concluded from page* 259.)

Nephrorrhaphy.—The main object of this communication is to advocate the performance of nephrorrhaphy, or fixation of the kidney by suture, in all cases of movable kidney where the patient's life is endangered by the persistence of the condition, or in which the sufferings are of such an aggravated character as to make life a burden. It

is understood, of course, that a careful diagnosis must precede the operation. Such diagnosis must not be confined to the mere detection of a movable kidney, but must include a complete canvass of the patient's physical condition, all the organs, but especially the generative, being thoroughly interrogated for evidence of disease. Only after such thorough investigation can it be decided whether the symptoms, or the majority of them, depend upon movable kidney, and whether nephrorrhaphy is likely to afford relief. In many cases it will be found that operations upon the genital organs are indicated in addition to nephrorrhaphy. Whenever possible, all the various operations necessary in a particular case should be performed at the same sitting.

I will now describe the operation of nephrorrhaphy as I have practised it:

The patient is placed upon the table in the left lateral (Sims's) position. Two small, firm pillows or cushions are so placed upon the table as to press into the left lateral and anterior regions of the abdomen, crowding the viscera upward to the site of operation and putting the latter well upon the stretch by separating, as far as possible, the right twelfth rib from the crest of the right ilium. The same antiseptic and aseptic precautions are observed as at a cœliotomy. The incision, made along the outer edge of the erector spinæ muscle, should in all cases extend the entire distance between the lower edge of the twelfth rib and the crest of the ilium. It should be made more or less oblique, according to the lesser or greater distance between these points. The superficial fat, the tendon of the latissimus dorsi, and the conjoined tendon of the internal oblique and transversalis are successively divided along the whole length of the cutaneous incision until the peri-renal fat is reached. The outer fibres of the quadratus lumborum occasionally overlap the line of incision, and are then cut through along their length. The fatty capsule is penetrated by a small incision until the kidney with its capsula propria is detected at the bottom of the wound. Palpation of the kidney, with one or two fingers, through the wound of the fatty capsule, will enable us to get our bearings and determine the extent to which the length of the incision in the fatty capsule should be increased in both the upward and downward directions. The fatty capsule is incised along the whole length of the convexity of the kidney, after which it is drawn out of the wound as far as it will go, and the redundancy of the fat sac is cut off on either side at a level with the bottom of the wound. In doing this care must be exercised not to open the peritoneum at the lower pole of the kidney. The trimmed edges of the fatty capsules are secured with a small pair of T-shaped forceps for guidance in the subsequent suturing. The delicate part of the work now begins. The capsula propria of the kidney is incised along the whole length of the convexity of the organ in the mesial line. To do

this successfully the kidney must be moved up and down so as to expose successively, at the bottom of the wound, the lower and upper halves of the organ. A pair of tenaculum forceps or two are of material aid in this and the subsequent parts of the operation. They must, however, be used with exceeding gentleness, as the kidney substance is exasperatingly friable, and they readily tear out. During this and subsequent steps of the operation it is of paramount importance that the kidney be pressed well into the bottom of the wound, so as to be readily accessible. If the two cushions spoken of at the beginning have been well placed under the left loin, nothing further is generally necessary, the kidney being well sustained in place, merely moving rhythmically upward and downward with respiration. If the cushions are not properly placed, or prove insufficient, the hand of an assistant pressing upon the abdomen so as to crowd the kidney into the wound must be made to take their place or to supplement them. After the capsula propria has been incised it is stripped off from the kidney substance on either side, until about one and a quarter centimetres of the kidney substance are exposed on either side along the whole length of the incision through the capsule, thus making raw surface ten to twelve centimetres long by two and a half centimetres wide for union with the deep parts of the lumbar incision. It is just here where nephrorrhaphy performed by stitching the fatty capsule alone, or by stitching the kidney without opening its capsula propria, failed, both the fatty capsule and the capsule proper being tissues in no way adapted to firm cicatricial union with contiguous parts. The stripped off capsula propria is not removed, but is doubled backward upon the still adherent portion like the lapel of a coat.

Thus far the steps of the operation have been identical in all my cases. In the method of suturing, however, I have made slight variations. At first I sewed with silkworm-gut, embracing on either side, in each suture, skin, superficial fat, the tendons of the abdominal muscles, the cut and trimmed edges of the peri-renal fatty capsule, the reflected as well as the still adherent capsula propria. The loop of the suture penetrated the kidney substance to the depth of one to one-and-a half centimetres. Five or six such sutures were usually passed and tied upon the skin after a rubber drain had first been passed to the bottom of the wound and caused to lie along the raw kidney substance its whole length, with an end emerging at either angle of the wound. In my later cases I attached the kidney to the deeper and firmer tissues of the abdominal walls, the muscles and aponeuroses, by buried sutures of kangaroo tendon or silkworm-gut, passing a drain composed of ten or twelve silkworm-strands along the raw kidney surface, instead of the rubber drain. The purpose of the drain is twofold; first, to remove all secretions, which might interfere with primary

union, from the depths of the wound, and secondly, to favor firm cicatricial union by mild irritation of the raw kidney substance and the contiguous deep tissues of the abdominal wound. In tying the deep buried sutures, whether of silkworm-gut or of kangaroo tendon, care must be exercised not to draw them too tightly, as they readily cut through the friable kidney substance. The skin and superficial fat are closed over the deep buried sutures by a running suture of catgut. Union by first intention has been the rule. The dressings are changed for the first and last time on the eighth day, when the drain is removed. The patient is kept upon the back for three weeks, and then allowed to sit up and go about as she pleases.

Although the stitches are passed deeply through the kidney substance, I have in only one case, a double nephrorrhaphy at one sitting, observed hæmaturia or albuminuria after operation, though other writers mention these as of occasional occurrence. Since the experiments of Tuffier have demonstrated that destroyed or ablated kidney tissue is readily and speedily replaced, under ordinary circumstances, by a liberal regeneration of new kidney structure, we need no longer take into account the slight traumatism inflicted by the passage of needles and sutures.

The mortality of the operation should be practically *nil.* Of my twelve cases I lost one in which the peritoneum was accidentally opened, and a diphtheritic infection of that membrane unfortunately occurred. The details are narrated in the history of the case as recorded below.

Of the eleven cases which recovered, one, a double nephrorrhaphy performed at one sitting, is as yet too recent to speak of final results. A second patient has not as yet left her bed. Of the other nine, in not one has the sutured kidney, to my knowledge, become movable, the first patient having been operated upon February 8, 1890, and the last, four months ago. Both anatomical and therapeutical results are all that could be desired. None of my patients have worn a supporter of any kind since operation.

I have in the above endeavored to state facts and formulate views based upon my own experience and observations, as well as upon the work of those authors who have preceded me in writing upon the subject of movable kidney. I have avoided lengthy quotations from and frequent references to the writings of others, not from want of appreciation of their work, but from a desire not to extend unduly the limits of this paper.

I append the histories of all the cases of movable kidney, twelve in number, in which I have performed nephrorrhaphy.

CASE I. *Movable right kidney; endometritis and hypertrophic elongation of cervix; nephrorrhaphy, with relief of symptoms and permanent fixation of right kidney; subsequently movable left kidney, for a time, with return of symptoms; final cure.*—L. K., twenty-two years, single, seamstress,

was admitted to hospital January 23, 1890. Menstruation began at thirteen, and with the exception of one year of amenorrhœa, has been regular, though scanty, ever since. Three years ago had a severe and prolonged attack of malarial fever. Since then she has suffered continuously with extreme nervousness, hysterical manifestations, almost constant cardiac palpitation, pyrosis, dyspepsia, constipation, occasional pains in back, and more or less dysmenorrhœa.

Examination: Tubes and ovaries normal in size and position, not tender on pressure. Uterus normal in position; corpus normal in size, cervix markedly elongated. Endometritis. Right kidney normal in size, freely movable between its normal position and a point just within the anterior superior spine of the ilium. Left kidney in normal position.

Nephrorrhaphy, February 8, 1890, after the method described in the body of the paper, the uppermost kidney suture passing through the eleventh intercostal space and embracing the twelfth rib. Uneventful recovery. Patient discharged March 7, 1890.

One year later the patient gave the following account of herself: Following the operation the nervousness, cardiac palpitation, and stomach symptoms disappeared almost entirely. The dysmenorrhœa and occasional backache, however, persisted, although in less severe degree. For six months she regarded herself as substantially well, when all the old symptoms, one by one, returned. A slight cough developed in addition.

Examination showed persistence of the endometritis and a slight swelling of the left tube. Right kidney immovably fixed behind the scar of lumbar incision. Left kidney movable to the extent of seven to eight centimetres in a downward direction. Signs of incipient phthisis at apices of both lungs. Patient requested operative fixation of the second kidney, but in view of her poor family history (three sisters dead of pulmonary consumption) the condition of her lungs, and a suspicion of developing tubal tuberculosis, I advised waiting.

The patient is, nearly two years and nine months after operation, the picture of perfect health. Immediately following the last report, a year and a half ago, she improved in health and got married. The symptoms due to the movable left kidney slowly but completely disappeared as she grew stouter. She has had absolutely nothing to complain of for a year past, and is now two months pregnant. The right kidney, as several of you have verified by examination, is immovably fixed to the scar of the lumbar incision. The lower edge of the left kidney can be barely palpated, its previous mobility having almost entirely disappeared, due no doubt to increased deposit of peri-renal fat.

Case II. *Movable right kidney; retroversion of uterus; laceration of cervix uteri; trachelorrhaphy and shortening of round ligaments followed by but slight relief; nephrorrhaphy followed by immediate and complete disappearance of symptoms.*—Mrs. A. LeB., thirty-seven years, married, mother of five children. Last confinement three years ago; no miscarriages. Menstruation regular, with rare exceptions, the flow lasting seven days. Family history indifferent. For two or three years past has been troubled with general nervousness, and a moderate degree of cardiac palpitation and gastric dyspepsia. During the past four months pains in the left epigastrium, in tenth intercostal space posteriorly, and in left inguinal regions have been the prominent symptoms. Anorexia; bowels regular.

Examination, in narcosis, May 15, 1890. Ovaries and tubes normal in size. Uterus retroverted in second degree. Corpus uteri normal in size. Cervix slightly thickened and enlarged, lacerated for 2.5 centimetres to left. Ectropion of cervical mucosa. Vagina and vulva normal.

Right kidney normal in size, displaced downward and forward to pelvic brim. From this position it can be freely moved across the bodies of the lumbar vertebræ to the left of the spine, thence upward on the left side, and again across the spine to its normal position. Left kidney in normal position.

May 19, 1890. Trachelorrhaphy and shortening of round ligaments, the left ligament being shortened nine, and the right ten centimetres. Primary union of all wounds.

These operations were followed by but slight relief of symptoms, the majority of which were construed as due to the movable right kidney.

Nephrorrhaphy, June 12, 1890, after the method described. The peritoneum was accidentally opened near the lower pole of the kidney, the rent being immediately closed by running catgut suture. Uneventful and afebrile recovery. Patient discharged four weeks after operation.

Two months later the patient presented herself with the statement that since the nephrorrhaphy she had been perfectly well for the first time in many years, all her disagreeable symptoms having disappeared. The right kidney was found securely anchored to the cicatrix of the lumbar incision. Uterus in normal anteversion. In spite of persistent efforts to trace the patient I have been unable to learn anything of her since.

Case III. *Mobility of both kidneys; endometritis and catarrhal salpingitis; emphysema pulmonum; nephrorrhaphy for fixation of right kidney; complicated recovery; permanent fixation of right kidney and partial relief of symptoms; subsequent increase of adipose tissue, resulting in better support of left kidney, and a complete cure.*—M. A., thirty-four years, single, religious. Family history poor, her father, a brother, and a sister having died of pulmonary phthisis. Menstruation regular, the flow lasting five to six days.

With the exception of symptoms due to pulmonary emphysema patient was well up to four years ago. At that time she began to notice a frequent swelling of the abdomen, and to be troubled with general nervous symptoms and gastric indigestion. The nervousness and dyspepsia gradually became intensified, pains in both inguinal regions were superadded, and the periods became painful. Leucorrhœa, constipation, and occasional scalding on micturition.

Examination, April 25, 1891. Uterus normal in size and position. Endometritis corporis et cervicis. Bilateral catarrhal salpingitis, the tubes being slightly thickened and exquisitely sensitive on pressure. Ovaries normal.

Right kidney normal in size and freely movable in the arc of a circle having its centre at the normal postion of the kidney, and a radius of 10 centimetres. Left kidney movable to extent of 5 centimetres in a downward direction.

Nephrorrhaphy, April 29, 1891. Chloroform employed in preference to ether on account of the tendency to bronchitis. Operation as described. Convalescence complicated and retarded by an acute catarrhal pneumonia, involving the lower half of right lung, and lasting ten days; by

an acute endocarditis of a week's duration, and by the formation of a peri-renal abscess, which kept discharging until six weeks after operation, when it definitely healed. Patient discharged June 25, nine weeks after operation.

Permanent relief of the majority, though not of all, the symptoms followed the operation. A year following the operation the right kidney remained firmly anchored in its new position; the mobility of the left kidney, the endometritis, and the salpingitis remained unchanged. Curettement and fixation of left kidney advised. Patient feels so comparatively well, however, that further operative interference is declined.

Patient last seen a few days ago, a year and a half after operation. Her weight had increased from 105 pounds at time of operation to 145 pounds. The great increase of fat has resulted in betters upport and decidedly lessened mobility of the left kidney. Right kidney firmly anchored to lumbar scar. With the exception of a slight leucorrhœa patient considers herself in the best of health, and has absolutely nothing to complain of.

CASE IV. *Movable right kidney; nephrorrhaphy; death from acute septic (diphtheritic) peritonitis thirty-six hours after operation.* — A. B., thirty-four years, single. Referred to me by Dr. A. Strong. Family history indifferent. Menstruation regularly every three weeks, the flow lasting three days. Has suffered much and constantly during the past four or five years with dyspeptic symptoms, of which severe pain in the epigastrium, most intense about one hour after meals, was most bitterly complained of. Occasional attacks of nausea, vertigo, vomiting, and constant anorexia the other main symptoms.

Examination, April 28, 1891. Genitalia normal in every respect. Right kidney movable to extent of twelve centimetres forward and downward. Left kidney in its proper place.

Nephrorrhaphy, April 30, 1891. Usual incision—more oblique than ordinarily, on account of limited space between ribs and crest of ilium. Peritoneum accidentally opened near lower pole of kidney. Some time was spent in examining the peritoneal rent to make sure that no viscus was wounded. After satisfying myself that such was the case, the peritoneum was closed by a running catgut suture, and the operation completed in the customary manner. Six hours after operation the patient developed symptoms of acute peritonitis, to which affection she succumbed thirty-six hours after operation.

Autopsy, twelve hours after death. Peritoneum everywhere intensely injected and its lustre lost to a great degree. No adhesions. The injection was most intense in the vicinity of the right kidney, where also a thick reddish fluid to the amount of seventy-five grammes had collected. The peritoneal wound made at operation involves the parietal peritoneum only, no viscus being injured. Kidney sutures were examined and found not to have cut through the kidney substance, which they traversed at a depth of a little over one centimetre from the surface of the organ.

On the morning of operation I awoke with a pain in the throat which I disregarded, not being subject to throat affections. The operation was performed at 9 A.M. Immediately after the operation I noticed that the pain in the throat had increased and that I was slightly feverish. A colleague examined my throat and pronounced me suffering from diphtheria, a diagnosis which further developments con-

firmed. I believe that while I was bending over and examining the opened peritoneum the latter became infected from the expired air from my throat. The foudroyant character of the peritonitis, unusual even in the most septic forms, would tend to bear out the supposition. Unfortunately, no bacteriological investigation of the peritoneal contents was made.

Case V. *Movable right kidney; endometritis; bilateral catarrhal salpingitis; curettement, followed by partial relief; nephrorrhaphy, seven months later, followed by complete cure.*—A. H., thirty-three years, single, cloakmaker. Father died of pulmonary consumption. Periods regular, every four weeks, lasting five to nine days. Leucorrhœa for the past twenty, and severe dysmenorrhœa for the past fifteen years. Had a fall eighteen months ago, and constant pain since over pubic region, aggravated on standing or walking. Urination frequent, but without pain or scalding.

Following an attack of typhoid fever and pneumorrhagia six years ago, the following symptoms developed in addition to those above enumerated. It may be added that before the attack of typhoid fever the patient was quite stout, but has never since regained her original weight. She has become moderately nervous, appetite has failed, pain in left half of epigastrium after eating; flatulence, constipation, and cardiac palpitation have developed.

Examination, September 3, 1891. Uterus in normal position, slightly and uniformly enlarged. Left ovary and tube normal in size, prolapsed into Douglas' sac. Right ovary and tube normal in size, fastened in normal position by adhesions. Both tubes tender on pressure. Endometritis; double catarrhal salpingitis.

Kidneys not examined.

September 14, 1891. Curettement followed by swabbing of uterus with equal parts of carbolic acid and glycerin and gauze drainage.

March 28, 1892. Patient reports that the dysmenorrhœa and the leucorrhœa, from which she had suffered so long and severely, had entirely disappeared since the curettement, the menstrual flow lasting only half as long as formerly and being entirely painless. The nervousness, dyspeptic symptoms, epigastric pains, and cardiac palpitation persisted as formerly.

Examination shows quite normal condition of uterus and appendages. Tubes no longer sensitive on pressure.

Right kidney movable some eight centimetres in a downward direction, a condition entirely overlooked at previous examinations.

Nephrorrhaphy, April 8, 1892, in usual manner, except that kidney was fastened by buried suture of kangaroo tendon. Primary union; uneventful convalescence.

July 24. Pain in left side has entirely disappeared. Appetite and digestion are steadily improving. Patient considers herself perfectly well. Right kidney remains firmly anchored in its new position.

October 27. Every one of her old symptoms has entirely disappeared. Right kidney, on examination to-day, found securely anchored to the scar of the lumbar incision.

Case VI. *Movable right kidney; laceration of cervix uteri; nephrorrhaphy, curettement, and trachelorrhaphy, at same sitting; cure.*—Mrs. E. B., twenty-three years, married, mother of three children, the last born eighteen months ago. Symptoms date from December, 1891.

Pain in left half of epigastrium, worse after eating; anorexia; emaciation; nervousness, and especially restlessness at night; headaches; dysmenorrhœa.

Examination, April 23, 1892. Uterus normal in size and position. Adnexa on both sides normal. Cervix uteri slightly lacerated.

Right kidney movable to the extent of ten centimetres in a downward direction. Left kidney in normal position.

Nephrorrhaphy, curettement, and trachelorrhaphy, at same sitting, April 26th. Kidney fastened by buried kangaroo sutures. Primary union of all wounds.

Relief of all symptoms began within two weeks after operation and persisted when patient was last seen, three months later. Kidney remains fixed in its new position.

October 27. Patient examined, and right kidney found securely fastened to lumbar scar. All her symptoms had vanished as if by magic on the day of operation and have remained away since.

Case VII. *Movable right kidney; retroversion of uterus; endometritis; double catarrhal salpingitis; curettement, shortening of round ligaments, and nephrorrhaphy, at same sitting; cure.*—A. B., twenty-five years, single, trained nurse; suffered from acute arsenical poisoning in 1887, from typhoid fever and yellow fever in 1888, from influenza and pneumonia in 1891. Menstruation was regular until three years ago; it has since gradually become less frequent until now it occurs about once in four months and is very scant. Four years ago, as a result of severe strain at lifting, the uterus prolapsed completely outside of the body, necessitating reduction under ether.

For past four years she has had chronic dyspepsia, pains of a neuralgic character in various parts of abdomen, headache, extreme nervousness, and pronounced hysteria, with almost constant cardiac palpitation. During the past year leucorrhœa, a pressure pain over pubis, and occasional tumefaction of abdomen have been added to the above symptoms.

Examination, May 8, 1892. Adnexa uteri normal in size, sensitive on pressure. Uterus undersized; retroverted in first degree.

Right kidney of normal size, movable for ten to twelve centimetres in a downward and forward direction. Left kidney cannot be palpated.

Curettement, shortening of round ligaments, and nephrorrhaphy, at one sitting, May 10, 1892.

All operative wounds healed by primary union. Ten weeks after operation patient reports as follows: With the exception of weakness (and well-marked anæmia) she now considers herself perfectly well. The dyspeptic symptoms disappeared two weeks and the leucorrhœa three weeks after operation. Neither has returned. The hysteria and nervousness yielded more slowly but are now almost entirely gone. She was practically a new woman. On examination the uterus is found in normal anteversion and the right kidney securely moored in its normal position.

Efforts made within the past two weeks to trace the patient have proved unsuccessful.

Case VIII. *Movable right kidney; endometritis; salpingitis catarrhalis; curettement and nephrorrhaphy; cure.*—J. H., eighteen years, single; began to menstruate at eleven, and ever since has suffered from severe dysmenorrhœa, the flow occurring every four weeks and

lasting three to fourteen days. She was otherwise well until thirteen years of age, when she had a severe attack of diphtheria. Following this, the following symptoms developed one by one: Marked emaciation, pains in left inguinal and left epigastric regions, leucorrhœa, anorexia, dyspepsia, periodical tumefaction of abdomen, marked nervousness, headaches, cardiac palpitation, inability to sleep upon the left side, constipation. For the past five years she has been under the care of many physicians, travelling to Europe a number of times in hopes of finding relief. For the above history I am indebted to her family physician, Dr. George C. Stiebeling, who brought the patient to me for examination, May 13, 1892.

Exaggerated anteversion of uterus. Catarrhal salpingitis of left side with slight thickening of tube. Right appendages normal. Endometritis.

Right kidney moderately enlarged and movable ten to twelve centimetres downward and forward to just behind umbilicus. Left kidney cannot be palpated. Spleen decidedly enlarged.

May 17, 1892. Curettement followed by nephrorrhaphy.

Uneventful convalescence, the wound healing by primary union.

Ten weeks after operation patient reports as follows: The first period following operation was the only painless one of her life. The second was as painful as usual; the third again painless. Every symptom she formerly complained of, with the exception of the nervousness, disappeared as if by magic during the first two weeks after operation, not to appear again. The nervousness has diminished so greatly as to be no longer uncomfortable. The mental condition has changed from one of melancholy to cheerfulness and happiness.

Right kidney remains where it was anchored at operation. Pelvic organs apparently normal.

October 26. The patient remains perfectly well, every symptom, including the nervousness, having entirely and permanently disappeared. Right kidney remains securely anchored in its normal position.

Case IX. *Movable right kidney; Laceration of cervix uteri; endometritis; curettement, amputation of cervix, and nephrorrhaphy, at one sitting.*—Mrs. L. M., forty-three years, married, mother of three children, the youngest being eight years old. Menstruation began at eighteen years, and was regular up to eighteen months ago. At that time an amenorrhœa of three months was followed by the passage of clots (miscarriage?) and free bleeding lasting some six weeks. As a result she became very thin and anæmic, and from this period dates her symptoms. These are: occasional leucorrhœa and scalding on micturition, pain after eating, gaseous eructations, transitory pains in left epigastrium, nervousness, and irritability. These symptoms have gradually increased in intensity. She was placed under my care by her family physician, Dr. A. Rupp.

Examination, June 11, 1892. Ovaries normal in size. Both tubes slightly sensitive to pressure, but not enlarged. Uterus in normal position; corpus of normal size; cervix slightly hypertrophied and lacerated for 2.5 cm. to left. Eversion and erosion of cervical mucosa. Endometritis. Right kidney movable in a downward and forward direction, until its lower pole reaches the median line at a point 8 centimetres below the umbilicus. Thence it can be swept around in a circle across the spine to the left and back to its normal position on the right side. Kidney not enlarged.

June 14, 1892. Curettement, amputation of cervix, and nephrorrhaphy at same sitting. Primary union of all wounds.

Patient discharged July 6th, feeling well, and with right kidney in good position.

October 22. Patient presents herself to-day with the statement that all her symptoms have disappeared, and that she considers herself perfectly well. On examination the right kidney is found securely anchored to the scar of the lumbar incision.

Case X. *Movable right kidney; descensus et retroversio uteri, both in first degree; endometritis; laceration of cervix uteri and of perineum; curettement, amputation of cervix, and perineorrhaphy at one sitting, followed by scarcely any relief; subsequently ventrofixation of uterus and nephrorrhaphy, followed by speedy disappearance of symptoms.*—Mrs. S. K., thirty-eight years, married, mother of three children, the youngest being six years of age. Sent by Dr E. J. Messemer. Menstruates regularly for five days every four weeks. Ever since birth of first child, nine years ago, she has been troubled with the following ills: leucorrhœa, backache; pains in all parts of body, fugitive in character (spinal irritation); dizziness, nervousness, anorexia, dyspeptic symptoms, cardiac palpitation.

Examination, May 10, 1892. Appendages normal on both sides. Uterus prolapsed and retroverted, both in first degree. Corpus normal in size. Cervix lacerated bilaterally, thickened and elongated. Moderate cystocele and rectocele. Perineum and lower end of vaginal tube lacerated in first degree. Right kidney movable ten centimetres in a downward direction. Left kidney in normal position.

May 13, 1892. Curettement, amputation of cervix, and perineorrhaphy. Primary and firm union. Patient discharged June 9, 1892.

In spite of the successful result of the plastic operations, patient experienced only moderate relief, the chief annoying symptoms persisting. Among these were various pains, an uneasy feeling in the right lumbar region, great nervousness, dyspeptic symptoms, and a full feeling in vagina.

Examination, June 26. Slight cystocele persists; rectocele has disappeared. Uterus still low in pelvis and retroverted in first degree. Kidneys as at first examination.

June 28. Nephrorrhaphy and ventrofixation of uterus at same sitting. The nephrorrhaphy in this case proved unusually difficult, the patient being short and stout, and the distance between the last rib and crest of ilium measuring but four centimetres. An unusually oblique incision was employed, and the operation successfully completed under great disadvantages.

The nephrorrhaphy and the cœliotomy wounds healed by first intention. Convalescence was complicated and prolonged by an acute catarrhal pneumonia which developed a week after operation, and ran a course of one week, and by a phlegmasia alba dolens of right leg (thrombosis of right femoral vein), beginning two weeks after operation and keeping the patient in bed until July 27th. Discharged August 6th, with both uterus and kidney held well in place. Nearly every one of her former symptoms disappeared before she left hospital.

October 27. Every symptom of which the patient formerly complained has disappeared and remained away. The right leg still a little

swollen. The sutured kidney remained securely anchored in its normal position.

Case XI. *Mobility of both kidneys following removal of a large ovarian cystoma; double nephrorrhaphy at one sitting.*—M. B., forty years, single, domestic, was referred to me by Dr. Carl Edel. On June 17, 1892, I removed from patient a large, many-chambered ovarian cyst filling the abdomen. Twisting of the pedicle had occurred, the cyst had become strangulated, and all its chambers were filled with blood, fluid and clotted. Patient made an uneventful recovery from the ovariotomy, and was discharged four weeks after operation. Dyspeptic symptoms and general nervousness, which had existed for some time prior to the development of the ovarian tumor, but had disappeared with the increase of the abdominal enlargement, now reappeared with increased severity. On examination before leaving hospital both kidneys were found to be freely movable; the right down to the anterior superior spine of the ilium, the left from 8–10 centimetres in a downward direction.

Double nephrorrhaphy, October 11, 1892, the left kidney being first sutured. I found it very difficult to operate on the left kidney, the organ showing a tendency to hide behind the ribs. It required one hour to sew the left kidney, and a further half-hour to fixate the right.

Patient has made a perfectly uneventful recovery. On the third day a slight transient albuminuria was noticed which disappeared in a few hours, not to return. This is the only one of my cases in which albuminuria was noted after nephrorrhaphy.

November 10, 1892. Patient left her bed three weeks after operation. Both kidneys are securely anchored in the loins, and the patient's symptoms have vanished.

I record the case more especially because double nephrorrhaphies are as yet comparative rarities.

In Lindner's collection of twenty-nine nephrorrhaphies, the double operation figures but twice: Hahn, in 1881, operated at two sittings, four months apart, upon the right and left kidneys of the same patient, and Kuster performed a double nephrorrhaphy at one sitting in 1883.

Case XII. *Movable right kidney; retroversion of uterus; cirrhosis of left ovary; double uterus; mitral insufficiency; nephrorrhaphy, curettement, unilateral salpingo-oöphorectomy and ventrofixation of uterus at one sitting; recovery.*—K. H., twenty-three years, single, domestic, has been ill for nearly two years with a variety of symptoms, evidently due to a number of pathological conditions. The chief complaints noted are cough and dyspnœa on exertion, cardiac palpitation, cardialgia, frequent vomiting spells, nausea, gaseous eructations and distress after meals, constipation, pain in back, leucorrhœa, and coccygodynia.

Examination, October 15, 1892. Uterus somewhat large, retroverted in second degree. Tubes and ovaries on both sides normal in size, non-sensitive on pressure. Left ovary very hard (cirrhosis). Right kidney normal in size, movable seven to eight centimetres in a downward direction. Rude systolic bruit over left ventricle and apex of heart. Spleen moderately enlarged. Lungs normal.

Operative interference dissuaded from on account of the multiplicity of lesions conjoined with organic cardiac disease. The possibility of

death on the table was presented to the patient. She, however, insisted on operation, stating that she preferred risking her life in trying to get well to living further in the same misery.

On October 25, 1892, under ether anæsthesia, I performed nephrorrhaphy, curettement, salpingo-oöphorectomy (the left tube and calcareous left ovary being removed), and ventrofixation of the uterus, at one sitting. At the curettement it was noticed that the curette could be passed into two different cavities within the uterus, with a partition between them. On opening the abdomen the corpus uteri was found to be double (with a single cervix). The two halves were fused along the median line, each corpus having but one tube and ovary. The larger, right half of the uterus was ventrofixated in the usual way.

November 10. Patient has thus far made an uneventful recovery, is out of danger, and is feeling well.

RÉSUMÉ.—The subject of movable kidney is of paramount importance and interest to every practitioner of the healing art, but especially so to the gynecologist.

Movable kidney is of much greater frequency in the human female than is generally supposed. Of a series of five hundred women examined by the author, ninety were found the possessors, amongst other things, of movable kidneys.

The affection *appears* to be comparatively rare among men.

In the overwhelming majority of cases the right kidney alone is movable.

Not every movable kidney produces symptoms.

The symptoms of movable kidney frequently both coexist with and simulate those of various diseases of the female sexual organs. The discriminating diagnosis may offer difficulties.

Atrophy or absorption of the peri-renal fat is the chief etiological factor in the production of movable kidney. Other causes assigned by various authors are: tight lacing, laxity of abdominal walls, congenital predisposition, and severe straining.

A distinction should be maintained between movable and floating kidney.

A movable kidney is one movable within a pouch or hollow formed within its own fatty capsule. A floating kidney has normal relations with that portion of its fatty capsule which it carries with it in its excursions, and is supplied with a mesonephron, the length of which determines the degree of mobility. This paper deals only with the movable kidney.

The symptoms are likely to be more distressing in the earlier than in the final stages of movable kidney.

The most characteristic combination of symptoms of uncomplicated movable kidney is the following: Digestive disturbances, chronic in character; epigastric pain, usually located somewhat to the left of the

median line; general nervousness; cardiac palpitation; inability to feel comfortable, or to sleep, when lying on the left side.

The other symptoms associated with movable kidney occur less frequently and are of secondary significance.

The symptoms of movable kidney are accentuated during menstruation and the early months of pregnancy. They disappear during the latter half of pregnancy and during the existence of large intra-abdominal growths.

The symptoms of movable kidney are due to pressure and traction upon, stretching, and irritation of various parts of the solar plexus of the sympathetic and of its branches. The theory of obliteration of the lumen of the duodenum, by pressure or traction, is insufficient to account for the symptoms.

A movable kidney is the easiest of all intra-abdominal conditions to diagnosticate. The diagnosis is made by palpation of the displaced organ.

A kidney once movable never again becomes firmly fastened in its normal position except by operative interference.

The symptoms due to movable kidney may be ameliorated by the dorsal decubitus, the Weir Mitchell treatment, massage, electricity, and abdominal supporters. All of these measures are, however, in the large majority of cases disappointing, and the benefit obtained, if any, is likely to prove only transient.

Nephrectomy, or extirpation of the movable kidney, is too radical and dangerous a resource as compared with nephrorrhaphy.

Nephrorrhaphy *properly* performed upon properly selected cases can, as demonstrated by appended histories, be depended upon to afford relief, with a good prospect of the permanency of the latter.

ADDENDUM.—From the date of reading this paper (October 27, 1892) to the date of revision of proof (March 10, 1893), I have performed ten further nephrorrhaphies for movable kidney. All of these made good and perfectly smooth recoveries, although in all of them but three, one or more additional operations were performed upon the genital organs at the same sitting. This makes my personal statistics twenty-two nephrorrhaphies with one death.

For buried sutures to fasten the kidney to muscle and aponeuroses, I now use silkworm-gut exclusively, having abandoned kangaroo tendon for reasons which this is not the proper place to enter upon.

I have had occasion since reading the paper to see again most of the eleven cases whose histories I have recorded above. In all of these, as well as in the ten patients since operated upon, the fastened kidneys remain securely anchored in their new position. In fact, I do not know of a single case in which I have performed nephrorrhaphy in which the fastened kidney again became movable.

For the sake of completeness I append an outline of the ten additional cases operated upon. Their histories are but a duplication of the twelve reported in full above, and to record them at length would be to weary the reader.

Case XIII.—M. K., aged thirty-five years, married. Endometritis; laceration of cervix and perineum; adherent retroverted uterus; cystoma of right ovary; movable right kidney; insufficiency of mitral valve.

May 17, 1892. At one sitting: Curettage of uterus; amputation of cervix; ovariotomy; liberation and ventrofixation of uterus.

Recovery and partial disappearance of symptoms.

November 8, 1892. Nephrorrhaphy and perineorrhaphy at one sitting.

Recovery and complete cure.

Case XIV.—S. S., aged twenty-seven years, married. Hæmatoma of left ovary; movable right kidney; hystero-epilepsy.

February 16, 1892. Unilateral salpingo-oöphorectomy, followed by disappearance of the epilepsy; the hysteria and symptoms due to the movable kidney persisting.

November 18, 1892. Nephrorrhaphy. Recovery, followed by disappearance of nearly all symptoms during the next two months.

Case XV.—A. B., aged nineteen years, single. Anteflexion of uterus; fungous endometritis; catarrhal salpingitis; movable right kidney.

September 12, 1891. Amputation of cervix uteri, with no relief of any kind.

December 22, 1891. Curettage and iodoform gauze drainage of uterus. Some relief followed this treatment.

During the spring of 1892, rapidly growing cystomata developed, under observation, in both ovaries.

June 28, 1892. Double ovariotomy and ventrofixation of uterus. Uneventful recovery, but persistence of the symptoms due to the movable right kidney.

November 29, 1892. Nephrorrhaphy. Recovery and complete cure.

Case XVI.—A. L., aged twenty-five years, single. Emphysema pulmonum; bronchitis chronica; endometritis; movable right kidney.

December 2, 1892. Currettage of uterus and nephrorrhaphy. Recovery. Disappearance within two months of all symptoms except those due to pulmonary emphysema, and general nervousness, which latter has, however, considerably improved.

Case XVII.—M. W., aged twenty-three years, married. Endometritis; catarrhal salpingitis; movable right kidney; pulmonary phthisis.

January 6, 1893. Curettage of uterus and nephrorrhaphy. Recovery and partial disappearance of symptoms. When last seen, two months after operation, was suffering from morbus maculosus Werlhofii.

Case XVIII.—A. O'C., aged twenty years, single. Endometritis; movable right kidney; menstrual epilepsy.

January 6, 1893. Curettage of uterus and nephrorrhaphy. Recovery. Patient left hospital feeling well, but has not reported since.

Case XIX.—K. O'R., aged thirty-one years, single. Movable right kidney; endometritis.

January 27, 1893. Curettage of uterus and nephrorrhaphy. Left hospital improved, February 20th, and has not been heard from since.

Case XX.—M. B., aged eighteen years, single. Movable right kidney; endometritis.

February 10, 1893. Curettage of uterus and nephrorrhaphy. Horse-shoe kidney. Recovery; still in hospital.

CASE XXI.—A. M., aged twenty-three years, single. Movable right kidney; pneumo-phthisis.

February 14, 1893. Nephrorrhaphy. Recovery; still in hospital.

CASE XXII.—G. C., aged thirty-one years, single. Movable right kidney; endometritis; left salpingo-oöphoritis; fissures of anus.

February 14, 1893. Curettage of uterus, nephrorrhaphy, and dilatation of sphincter ani. Patient still under treatment.

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A CONTRIBUTION TO THE STUDY OF THE FAMILY FORM OF SPASTIC PARAPLEGIA.

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VARIOUS diseases of the nervous system affecting several members of a family, and depending on a congenital tendency, have been recorded in recent medical literature. Besides the hereditary ataxy of Friedreich, Thomsen's disease, the chorea of Huntington and the progressive muscular dystrophies, the list of family diseases now comprises the peroneal or leg type of amyotrophy; an hereditary form of progressive spinal muscular atrophy complicated with bulbar paralysis, observed by Bernhardt;[1] a form of progressive dementia associated with contractures, described by Hornén;[2] an hereditary periodic paralysis of the trunk and the extremities, reported by Goldflam;[3] a disease characterized by dementia, ataxia, nystagmus, optic atrophy, studies by Noune;[4] and other nervous disorders, to some of which reference will be made later.

The present contribution on the subject of family diseases is based on the observation of two families in each of which several members are affected with spastic paraplegia, and in one of which there is also a case of bilateral spastic hemiplegia. It will, moreover, be seen that other members, while apparently healthy, exhibit a peculiarity which merits attention.

CASE I.[5]—Minna S., aged fifteen years, is a tall, intelligent girl. Her mother states that the child was born at term, and that delivery was very easy and rapid. There were no convulsions. It was noticed that the infant did not kick its legs about and push off the bedclothes like

[1] Virchow's Archiv, 1889. Bd. 115, H. 2.

[2] Neurolog. Centralblatt, 1890.

[3] Transactions of the Tenth International Medical Congress.

[4] Archiv für Psychiatrie, Bd. xxii.

[5] I am much indebted to Dr. Kuckein, of Oakland, who called my attention to this family and who furnished some of the details of their history.

other children. She began to walk at the age of eighteen months; her gait was then observed to be peculiar and uncertain, and it gradually assumed its present characteristics. I saw her for the first time about four months ago. Hers is the typical gait of *spastic paraplegia;* she shuffles along with the body inclined forward, swaying somewhat from side to side, scraping the floor with her toes, and the heels drawn up from the ground. The lower extremities are flexed at hips and knees, the thighs strongly adducted and the foot in the position of equinus. The muscles are not wasted, and react well to the galvanic and faradic currents, with perhaps a very slight diminution of contractility. The knee-jerks and adductor-reflexes are very much exaggerated; there is no ankle-clonus. The girl has full control over her hands and arms; examination reveals not the slightest functional disturbance in them. But all the tendon reflexes of the upper extremities are in excess; also the jaw-jerk. Intelligence, sensation, sphincters intact. The teeth are good. There is neither nystagmus nor strabismus. There is no pronounced paresis of the extremities, the uncertainty of the gait being due rather to hypertonicity than to weakness of the muscles. It may be added that the patient uses a tricycle with considerable dexterity.

Case II.—Carl S., aged five years, a brother of the above-described Minna S., presents the same abnormality, but in a less degree. His birth was attended with no difficulty, and occurred after a full period of pregnancy. When he began to walk, at the age of eighteen or nineteen months, his peculiar gait attracted attention; but even before that it had been noticed that the boy was accustomed to sit on the ground in a position different from that ordinarily assumed by children of his age; the legs were flexed on the thighs and rotated so that their inner surface and the inner border of the feet were in contact with the floor. For this position he still shows a predilection when playing. He has never had convulsions. The patient is very intelligent; his physical development corresponds to his age. When walking he clings to objects about him for support; if held by the hand he can walk a considerable distance. He proceeds in the characteristic shuffling manner, at times involuntarily raising the heels and scraping along on the tips of his toes. The thighs are adducted and the toes turned in. There is no wasting of the legs. Opportunity was afforded only once for an electrical examination; but the boy was recalcitrant, and no result was obtained. The knee-jerks are much exaggerated; there is a short foot-clonus. There is complete voluntary control of the upper extremities, but all the tendon reflexes are excessive; the jaw-jerk is easily elicited. Nystagmus and strabismus are absent; nor do sensation, the sphincters, and the special senses present any anomaly. The disease is said by the mother not to be progressive; on the contrary, continued exercise has diminished the spasmodic tendency. In both of these cases speech is normal. The girl has had the measles, both children have had whooping-cough, but have with these exceptions been well.

Inquiries into the family history elicited the following facts: The maternal grandfather is a hale German of advanced age, named M. He has been married twice; his first wife was the grandmother of the children Minna and Carl S. I have examined M., and found nothing abnormal about him, particularly no exaggeration of the reflexes. The history of the grandmother is enshrouded in mystery, but it would appear from what M. has at times been inclined to communicate, that

she had been almost totally deaf from childhood; her speech was abnormal; and, although she was able to write, and was even fond of reading, she is nevertheless described as having been mentally deficient and lacking in a sense of responsibility and duty. Her physical development was good, excepting the infirmity of hearing. Her family physician is said to have once remarked that "the girl should never marry." By this wife M. had two daughters, Minna—the mother of Minna and Carl S.—now aged forty, and Carola, aged thirty-eight, both of whom were born at term and without difficulty; and a son, August, who is said to have three healthy daughters. By his second wife M. had five children, one of whom died of consumption; another was examined by me and found to be healthy, with normal reflexes. There are said to be five grandchildren in this line, all of whom are healthy.

The daughter Minna was married to one S., now dead, who according to M.'s account had been treated for some time with mercury. It may be here stated that the family physician has never noticed anything of a syphilitic nature in Minna S. or her children. She is a well-built woman, of normal appearance. There is nothing peculiar in her gait. An investigation of her reflexes, however, shows that they are considerably exaggerated; a slight tap on the patellar ligaments produces a contraction of the quadriceps undoubtedly in excess of the normal; there is ankle-clonus; the tendon reflexes of the upper extremities and the jaw-jerk are also decidedly increased. Her children are: Fritz, twenty years old, healthy; reflexes normal. Louise, a tall girl of seventeen years, in whose appearance and walk nothing out of the ordinary is observed. But she presents the same *increase of reflexes* in the upper and lower limbs and the jaw as the mother. *Minna* and *Carl*, the children with spastic paraplegia already described. *Carola K.*, the sister of Minna S., is a healthy-looking woman. Her husband, K., is well and has normal reflexes. She herself has very much exaggerated knee-jerks; there is only an indication of ankle clonus, but a lively Achilles tendon reflex can be obtained; the "front tap contraction" of Gowers is easily elicited. The tendon reflexes of the upper extremities are all increased. The jaw-jerk is present, but is not excessive. Mrs. K. has borne seven children; labor was very difficult in every case.

The first child died during delivery; the second, Edward, aged fifteen years, was affected with *bilateral spastic hemiplegia*. Labor very difficult; instruments used, infant asphyxiated, and for a while considered dead. From his second to his fourth year he had two or three convulsions weekly. Between the ages of four and eleven no fits were noticed, but after the eleventh or twelfth year nocturnal seizures were observed. Of late no convulsive attacks have occurred. Has frequent headaches. Seems to be intelligent; is said to be fond of reading and to have a good memory. When he was nine months old his inability to sit upright and his habit of keeping his fists clenched attracted attention to his condition. At present there is a high degree of spastic diplegia. The adductor-spasm of the thighs is extreme, and causes at times complete crossing of the legs; "clasp-knife rigidity;" spastic contracture in knee-joints; "lead-pipe contraction;" during an attempt to stand the extensors of the foot pull the dorsum up so as to produce pes calcaneus. Leg muscles very thin. No patellar reflex on account of contracture; short foot-clonus. The lower extremities jerk very much when abruptly handled. Muscles of abdomen rigid. Very active tendon-reflexes in

the upper limbs; hands strongly flexed at the wrist and fingers inverted; choreatic and athetoid movements; arms flexed at elbows, but gradual passive extension easy. Speech is profoundly disturbed, but is not entirely unintelligible. There are no spasms of the facial muscles, but the boy has evidently not normal control over them; thus, he could not be induced to frown, to pucker up the eyebrows, or to screw the eyes up tightly, although he appeared desirous of complying. He can inflate his cheeks and draw out the angles of the mouth bilaterally, but could not be made to do so unilaterally, nor could he close each eye separately. He can protrude the tongue, but it and the muscles around the mouth move irregularly during the act. The jaw-jerk is very lively. A tendency to approach the chin to the sternum and turn it to one side is noticeable. Nothing unusual in the formation of the skull. No strabismus, no nystagmus. Sensation normal. The third labor difficult. Child healthy; walked at eleven months; died, when fourteen months old, of "summer-complaint." The fourth, *Amelia*, aged eleven years. Birth difficult. Healthy. Knee jerks exaggerated. Ankle clonus easily elicited. Tendon reflexes of the upper extremities active. Fairly active jaw-jerk.

The fifth child was born dead after difficult labor.

The sixth, *Mabel*, aged seven years. Birth difficult; instruments. Healthy child. Knee-jerk active, but not much exaggerated. Achilles tendon reflex active; reflexes of the upper limbs and the jaw-jerk very evident, but at any rate not much increased.

The seventh labor was very difficult; child died the day after birth. None of the marriages in this family was consanguinous.

We observe, then, in this family the occurrence of spastic paraplegia in a brother and a sister, and of bilateral spastic hemiplegia in their first cousin; in all three cases the affection was remarked in early infancy. In view of the etiology that is so often assigned to such cases, their multiple occurrence in one family is a fact of much interest; for the first two resemble in essential features the congenital spastic rigidity of Little or the paraplegia cerebalis spastica of Heine, and in the causation of this affection the influence of abnormal parturition, difficult labor, premature birth, and asphyxia neonatorum is conspicuous in a large proportion of the cases. This is true in an even higher degree of bilateral spastic hemiplegia. In the literature of the subject it is very often distinctly stated that the kindred of the patient were free from a similar affection and from other nervous disorders; and Rupprecht[1] tells of a woman with congenital spastic rigidity who had a healthy child, and of a man with the same disease who was the father of a healthy boy; in each of these cases the affected parent had been prematurely born. Rupprecht concludes that the disease is not transmitted by inheritance.

It might, therefore, seem that the cause of the disease is external and not inherent; and, if it is always to be regarded as a birth palsy, its occurrence in several children of a family would have to be explained

[1] Volkmann's Collection, No. 198.

by the repeated action of a common cause, such as some condition in the mother unfavorable to normal gestation or labor. This explanation is considered plausible by Schultze,[1] one of the very few authors who have published observations of this kind. He describes three children in the same family with spastic rigidity of the lower extremities; two of them had strabismus; in other respects all three were normal. The parents were healthy; they were not related. Their first child was born without difficulty, and remained well; the three next children are those referred to, and it is stated that they were born at term, but that each time labor lasted three days. There was no physician present; neither forceps nor version was resorted to, and the children appeared to be normal until they attempted to walk. Schultze attributes the spastic condition to some cerebral injury sustained during the protracted labor.

But in a large number of the isolated cases "the disease seems to affect perfectly healthy children without any assignable cause," and "in general it may be said that abnormal labor, though a common cause, is by no means the universal one that some writers would have us believe."[2] It is doubtful whether in Schultze's cases prolonged labor was really solely responsible for the spastic rigidity in the three children; it is certain, however, that abnormalities of parturition and labor are as inadequate to account for all the instances of multiple occurrence of the disease in a family as for all the isolated cases. Thus, Latimer[3] reports two cases of spastic paraplegia in the same family. The patients are a brother and a sister; in addition to the spastic rigidity of the legs the brother shows a slight thickness of speech and involuntary micturition and defecation, while the skin of the sister "seems hypertrophied." Other children in the family are healthy, as is also the mother. *There was no trouble at the birth of either child.* They have never had convulsions. Chronic alcoholism in the father is noted as having been possibly a predisposing cause.

Reviewing our own cases, we find no external cause to which the spastic rigidity of the brother and sister might be attributed; there was nothing abnormal at the birth of either child, and, apart from the affection in question, they are perfectly healthy. But the influence of difficult delivery in producing bilateral spastic hemiplegia in the cousin cannot be ignored. As far as I have been able to ascertain, the coincidence of spastic paraplegia and spastic diplegia in the same family has never been observed before. Were this case of spastic diplegia an isolated one there would be no hesitation in ascribing it solely to the injury sustained by the child during its passage into the world; but

[1] Deutsche med. Wochenschrift, 1889, No. 15.

[2] Bradford and Lovett: Orthopædic Surgery, 1890, p. 588.

[3] Transactions of the American Pædiatric Soc., 1889. Archives of Pædiatrics, Feb., 1890.

considering that in two other children of the family we find a similar disease without this cause, and in two sisters of this patient a similar difficulty of birth without this effect, we are naturally embarrassed in appreciating the factors concerned in the etiology of the disease.

We would certainly not be justified in excluding a family predisposition from our consideration of the etiology. The two mothers and the other children, with the exception of one son, all exhibit more or less increased tendon reflexes. It is open to discussion whether this peculiarity is to be interpreted as a symptom of the disease in its slightest degree or only as an indication of what might be called a spastic diathesis. Anomalies of tendon reactions have been noted as the sole physical peculiarity in individuals some of whose kindred were affected with a family disease of the nervous system; but this anomaly consisted in the *loss* of the knee-jerk in a member of the family in which Bernhardt[1] observed several cases of progressive spinal muscular atrophy complicated with bulbar palsy; and the knee-jerk was absent in four (otherwise normal) members of a family in which there were three cases of spastic paraplegia besides other nervous diseases, recorded by Bloch.[2] On the other hand, it is related in the thesis of Hammer[3] that in one family four brothers were affected with progressive muscular dystrophy, a fifth with tabes, while a sixth exhibited only "very active patellar reflexes." We shall meet with this excess of the tendon-reflexes also in the family to be next discussed.

It is worthy of note that spastic rigidity and increased reflexes are found only in the descendants of M.'s first (neurotic) wife, whereas they are absent, as far as could be ascertained, in those of the second.

The spastic diplegia is doubtless due to a morbid process in the cortex, perhaps porencephaly in the Rolandic regions. Concerning the pathology of the two cases of spastic paraplegia it would not be safe to base conclusions on the sections recorded by Förster and by Sachs, there being important clinical differencces; and the autopsies have not yet been reported.[4]

Case III.—The father of the second family, O'Connor, is a tall healthy man, aged thirty-eight years, denies syphilitic infection or addiction to drink. Has never known in his kindred any affection

[1] Virchow's Archiv, Bd. 115, H. 2.

[2] Kniephänomen und neuropathische Diathese. Arch. f. Psych., xii.

[3] Abstract in Neurolog. Centralblatt, 1891.

[4] Spastic rigidity of the extremities is a conspicuous symptom of the family diseases described by Pelizacus (Arch. f. Psych., xvi.), Dreschfeld (Med. Times and Gazette, 1878), and more recently by Gee (St. Barth. Hosp. Rep., xxv.). In the cases of Pelizacus and of Dreschfeld associated symptoms led to the diagnosis of multiple sclerosis; in the family reported by Gee, the father and two children were affected; they, father and elder child, exhibited in addition to the spastic condition atrophy of the intrinsic muscles of the hand. Only abstracts of these articles were accessible.

similar to that observed among his children, nor have nervous disorders of any other kind occurred among them. His reflexes are normal.

The mother is tall and robust, aged thirty-seven years. Has always been well. Kindred negative. Knee-jerk and Achilles tendon reflex quite active; the reflexes of the upper extremities are easily elicited; jaw-jerk lively. No ankle clonus. It is doubtful whether the reflexes of this woman are abnormally increased, but they are certainly much more active than those of her husband. Husband and wife are not related.

Of this union the issue has been eleven children, eight of whom are living. The firstborn died at the age of four years and a half, of diphtheria—had been healthy; the sixth died at the age of one month, cause of death unknown; and the tenth succumbed at six months to a bowel complaint. The surviving children are:

James (Fig. 1), aged sixteen years. Was well until about a year and a half ago; about that time noticed a certain degree of stiffness in the legs,

FIG 1. FIG 2. FIG. 3.

especially on rising in the morning. Gradually his present condition developed, but no progressive tendency has been apparent for months. His attitude while standing and during locomotion is that of a comparatively slight degree of spastic paraplegia. The lower extremities are flexed at knees and hips, and the thighs well adducted. The typical peculiarity of the gait is marked. Legs not wasted. Knee-jerks much exaggerated, but no patellar clonus, nor is there ankle clonus, although besides the usual plantar flexion of the foot a thrill may be felt by the hand holding

the foot when the tendo Achillis is tapped. Plantar, cremasteric and abdominal reflexes very lively. Abdominal muscles somewhat rigid. The upper limbs appear perfectly normal; motor power undiminished, use of fingers unimpaired. Reflexes much increased; a tap on the ulna produces contraction of biceps and pectoral muscles; a tap on the acromion causes flexion of forearms. Jaw-jerk well marked.

William (Fig. 2), aged fourteen years. Had been well up to the age of seven and a half years; then his legs began to get stiff, and the walk grew worse. Has been using crutches fully five years. Is rather tall for his age. Contractures in knee-joints, adductor spasm, pes equinus. Knee-jerks very much exaggerated; ankle clonus; plantar and cremasteric reflexes very lively. Cannot stand on the soles of his feet; the tips of the shoes are worn out before the heels show any sign of wear. Upper limbs normal, except that reflexes are increased; contraction of major pectoral when lower end of radius is tapped. Jaw-jerk not very active.

John (Fig. 3), aged thirteen years. Is said to have been well until he had "typho-malarial fever," four years ago. The peculiarity of his walk had been noticed before the illness; after recovery his gait was worse. In 1890 he was admitted to the Children's Hospital, when the following note was made: "Flexed hips, flexed knees, adducted knees, and double equinus. The legs can be put straight by considerable manual force, but the position is painful. The tread is on the toes." August 7, 1890, double achillotomy was done by Dr. Sherman. The boy is now plantigrade, knee-jerks exaggerated; slight ankle clonus. Very active abdominal and cremasteric reflexes. Functions of upper extremities unimpaired, but all the reflexes increased; also the jaw-jerk. This lad walks long distances without fatigue.

There is no diminution of power in the limbs of James and John, and the appellation of spastic paralysis would be inappropriate. In the case of William the contractures interfere sadly with station and locomotion.

Mary, aged eleven years. Healthy, gait normal. Tendon reflexes in upper and lower limbs increased; short foot clonus, active jaw-jerk.

Frank, aged eight years. Parents consider him somewhat stiff in the knees. Gait not evidently spastic, but knees tend to knock. Knee-jerks considerably exaggerated; slight, but evident ankle clonus. Superficial reflexes very active. Abdominal muscles slightly rigid. Tendon reactions in upper limbs lively, but less so than in James. Active jaw-jerk.

Maggie, aged six years. According to parents has habitually a "lazy, dragging walk." Knee-jerks much increased; slight ankle clonus could be elicited, but with difficulty, as the child could not be induced to relax the muscles. Tendon reflexes of upper extremities are present, but not excessive. Jaw-jerk quite active.

Matthew, aged three and a half years. Active knee-jerk and jaw-jerk. The other deep reflexes do not seem to be excessive, but examination is rendered difficult by the behavior of the child.

Annie, aged eight months. Lively knee jerk easily obtained. Began to teethe a short time ago, and is said to have had spasms.[1]

At the birth of William, Maggie, and Mary instruments were used, and labor was prolonged; the youngest child was born without the use of instruments, but labor lasted two days and nights; in the other cases delivery was easy. All the children were born at term.

[1] It was subsequently ascertained that this child had died of "water on the brain."

With the exception of the teething spasms of the youngest child there have been no convulsions. Nystagmus, strabismus, disturbances of sensation and of the sphincters are absent. The physical development of the children corrresponds to their respective ages. Their intelligence is held in low esteem by the father, who declares them to be, as a rule, "dull and unambitious;" against this judgment, however, maternal fondness protests. Although their attainments do seem to be rather meagre, there is, at any rate, no mental deficiency that could be justly designated as morbid.

The cases of spastic paraplegia in this family present the same general clinical appearance as the two cases in the first one, differing only in the time of onset. Their etiology cannot be detected in any external circumstance, and, although there is no proof of the direct hereditary transmission of a neurotic tendency, the prevalence of excessive tendon reactions in this family affords the same evidence as in the other of a predisposition to this disease.

Tooth[1] describes four brothers with spastic gait, increased reflexes, weakness of the sphincters, and disturbance of speech. These symptoms appeared at the ages of nine and a half, thirteen, and fifteen years. Despite the weakness of the sphincters and the anomaly of speech, Tooth assumes that primary lateral sclerosis is the anatomical basis of the affection, inferring this from the analogy of degeneration of the posterior tracts as the basis of Friedreich's hereditary ataxis. In regard to the disturbance of the sphincters and the difficulty of speech, Tooth's case resembles one of Latimer's, while the objections to the theory of pure lateral sclerosis do not exist in our cases. The observations of Bernhardt[2] and of Bloch[3] show that pure spastic paraplegia may attack several members of a family in adult life, and remain uncomplicated for many years, but that as late as ten years after the onset bulbar symptoms may supervene, which, according to Bernhardt, point to insular sclerosis. Primary lateral sclerosis is suggested by Philip[4] to be the lesion in a boy who became affected with spastic rigidity of the lower limbs at the age of seven years, and whose father had acquired a similar disease late in life, while three of his brothers had pseudo-hypertrophic paralysis transmitted to them through the mother, among whose relatives this disease existed.

By whatever terms the clinical aspect and the hypothetical pathology of all these cases may be designated, it is evident from the history of the two families here reported and the collated cases that spastic paraplegia may occur as a family disease, due to a congenital tendency, and appearing either in earliest infancy, during childhood, or in adult life. It may be assumed that the complications and the difference in the age of onset correspond to variations in the extent and nature of the morbid process.

[1] St. Barth. Hosp. Rep., xxvii. Abstract in Neurolog. Centralblatt, 1892, No. 8.
[2] Virchow's Archiv, Band cxxvi., 1891. [3] Loc. cit. [4] Brain, viii., 1886.

A CASE OF SYMPHYSIOTOMY.

By William T. Lusk, M.D.,
of New York.

Hannah P., primipara, aged twenty-seven, was admitted to the Emergency Hospital at 9 P.M., January 8, 1893. She had then been in labor about twenty-two hours. From her husband it was learned that she had been attended at her home by a physician since 4 A.M. The latter had unsuccessfully tried to perform version, and about three hours previous to her coming to the hospital he had caused her to be placed under chloroform and had applied forceps.

At the time of her admission the patient was in a somewhat exhausted condition. Her pulse was 130. The labor pains were frequent but cramp-like in character. An examination showed a very œdematous condition of the vulva, a perineum torn through to the rectum, and the anterior vaginal wall badly lacerated. The laceration of the cervix extended above the vaginal junction. On introduction of the catheter a small quantity of bloody urine was withdrawn.

Axis-traction forceps were at first applied to the head, but without success. I was summoned near midnight. At that time the pulse was 150, and feeble. I found a brow presentation. Owing to the firm retraction of the uterus version was impossible I feared to resort to craniotomy and the cranioclast, as the injuries already inflicted upon the soft parts seemed to preclude a lengthy operation and one always accompanied by contusion. I therefore decided to resort to symphysiotomy, hoping by so doing to correct without violence the faulty presentation. The operation was performed by means of the Harris-Galbiati knife. The separation of the symphysis was accomplished without difficulty. Two assistants were employed to exercise pressure upon the hips to prevent excessive divergence of the pubic bones. As was anticipated, the conversion of the brow into a vertex presentation was easily effected by the hand. Forceps were then applied to the head, and the extraction of the child followed with little delay.

The cut surfaces of the symphysis were then brought together, and the ligaments were sutured with catgut. The wound in the soft parts was stitched with No. 12 silk. A wide strip of adhesive plaster was passed around the hips and fastened across the pubes in front, and a firm bandage was adjusted. The patient rallied fairly well, but about 7 A.M. went into collapse and died at five in the afternoon.

The child was born alive; it weighed nine pounds; the head had been much injured by forceps, and the lower jaw was fractured, apparently from attempts to convert the brow into a face presentation. Death took place at the end of seventeen hours.

No autopsy was permitted in the case of the mother; the bandage and adhesive strap were, however, removed after death, and a careful examination of the pubic wound was made, both externally and *per vaginam*. It can be safely asserted that the symphysiotomy was in no way chargeable with the fatal issue.

REVIEWS.

DISEASES OF THE SKIN. By H. RADCLIFFE CROCKER, M.D., Fellow of the Royal College of Physicians of London, etc. Second edition, revised and enlarged, with ninety-two woodcuts. 8vo. Philadelphia: P. Blakiston, Son & Co., 1893.

WE had the pleasure four or five years ago of reviewing this work, and its gradual but certain attainment of the recognized position of one of the leading text-books on the subject has fully borne out the good opinion then expressed. If this was thought then, we can say now with greater freedom and surer basis that the second edition is a worthy successor to the first. The volume has been enlarged by the addition of about two hundred and fifty pages, and has been subjected to careful revision throughout. In the increased space are, among others, incorporated articles on erythema induratum, hydroa vacciniforme, recurring summer eruptions, pityriasis rubra pilaris, Morvan's disease, Darter's disease, angioma serpiginosum, angiokeratoma, adenoma sebaceum, phagedæna tropica, seborrhœic dermatitis, actinomycosis, and epidemic exfoliative dermatitis. Among the minor additions may be mentioned follicular disease of the scalp, grouped comedones, plica, and folliculitis decalvans.

The author thinks that we are now warranted in accepting the belief that such diseases as impetigo contagiosa, ecthyma, furuncles, carbuncles, and the pustular element in eczema, are all due to the same pus cocci. To these diseases we would add sycosis, the so-called folliculitis barbæ; and it is apparently, although not distinctly so stated, recognized by Dr. Crocker also, as in this new edition, to his former definition of sycosis, has been added "due to microbic infection."

The subject of alopecia areata which has been much discussed in recent years, comes in for its full share of the enlargement and revision. The author divides these cases into four classes: in the first placing those of universal alopecia; in the second, those with one or more patches in the course of a nerve, or on the site of an injury; in the third, those with small atrophically depressed patches; and in the fourth, those of the common type, in patches or bands of irregular distribution, and with short club-shaped hairs at the borders of the spreading patches. Those of the first two classes the author believes to be tropho-neurotic in origin; the third class, probably so; and the fourth class, which represents ninety-five per cent. of all cases, as parasitic, and of feebly contagious nature. He moreover believes, with Hutchinson, that there is a relationship between this disease and tinea tonsurans; stating that while, in children, the fungus gives rise to the ordinary picture of ringworm, in the adult it produces alopecia areata instead—

for the reason that the hair of the scalp of adolescence and adult age alters its consistence and the fungus is no longer able to penetrate into its substance as it is in children, but passing down between the root-sheaths separates the hair from its nutritive supply, and so leads to atrophy and gradual extrusion. It seems to us that such reasoning is discredited by the fact that the ringworm fungus is capable enough of penetrating the hairs of the beard and leading to their disintegration, as it certainly does in tinea sycosis; and these hairs are, as a rule, in every way essentially stronger than the hairs of the scalp. Moreover, if the ringworm fungus were the cause, this fact should have been long ago disclosed by the investigations and examinations made by many careful observers.

While, however, the author very properly gives his own views, based as they are upon extended and skilled observation, the subjects are all handled with marked liberality, and the opinions of his many *confrères* in dermatological work are freely quoted and given due weight. In fact, it would be difficult to criticise the work unfavorably, for it is an admirable and representative treatise, reflecting much original thought, but encompassing the whole subject of dermatology in its widest sense, and presenting the subject-matter in such a readable, full, yet concise manner, as to be readily comprehended by student or practitioner. It is, indeed, one of those rare books equally valuable to expert and general physician. Dr. Crocker is to be congratulated upon being the author of the leading English text-book on diseases of the skin; and the profession at large is also fortunate in having at its command a work of which every page bears the impress of honesty, thoroughness, and large experience. H. W. S.

DIE MICRO-ORGANISMEN DER MUNDHÖHLE. DIE ÖRTLICHEN UND ALLGEMEINEN ERKRANKUNGEN WELCHE DURCH DIESELBEN HERVORGERUFEN WERDEN. Von W. D. MILLER, Dr. Med. et Phil., Professor am zahnärzlichen Institut der Universität Berlin. Zweite umgearbeitete und stark erweiterte Auflage.

THE MICRO-ORGANISMS OF THE MOUTH; THE LOCAL AND GENERAL DISEASES CAUSED BY THEM. By W. D. MILLER, M.D., Ph.D., Professor at the Dental Institute of the University of Berlin. Second edition, revised and greatly enlarged. 8vo., pp. xxviii, 448; 134 illustrations and 18 photograms. Leipzig: Georg Thieme, 1892.

IT was our agreeable duty to call attention to the first edition of Dr. Miller's excellent work on *The Micro-organisms of the Mouth*, in the AMERICAN JOURNAL for September, 1889. As the general plan of the book is retained, we must refer our readers to the former review for a summary of its scope, pointing out here only such additions as are most striking in the present edition.

Throughout, the book bears evidence of most careful revision by its author, and it has grown, in consequence, to the extent of 150 pages. It is furthermore enriched by the addition of more than 20 new illustrations in the text and by 18 photograms of new species of pathogenic mouth-bacteria, and of the various stages of carious degeneration of

the teeth. These photograms are collected in three plates at the end of the book.

Probably the most notable addition in the present edition is a chapter devoted to the consideration of asepsis and antisepsis in dental surgery. In this the measures of prophylaxis of caries are considered; the treatment of incipient caries by means of germicides; the use of antiseptics in the treatment of cavities, dead teeth, and those whose pulp is undergoing putrefaction; the disinfection of instruments, etc., used in dentistry; the antiseptic action of the various materials made use of in filling teeth; and, finally, the sterilization of teeth about to be implanted. The conclusions reached are based upon a large experience and are confirmed by the results of many carefully conducted experiments, the recital of which would, however, carry us beyond the limits of this review. But we may say in general, that for operations of whatever kind about the mouth the most thorough antisepsis is recommended, and that of the antiseptics in vogue Miller prefers bichloride of mercury and peroxide of hydrogen for most purposes. For the disinfection of carious cavities he advocates the use of iodine trichloride, ascribing to it advantages over all other antiseptics, including sublimate.

In the second part of the book, that devoted to the consideration of the pathogenic bacteria found in the mouth and the diseases caused by them, we find the list of bacteria increased from 13 in the former edition of the book to 31 in the present one, many of them described here in detail for the first time. Here, again, the great importance of careful antisepsis in the surgery of the mouth is urged repeatedly. But perhaps nowhere does it receive such striking emphasis as in a table with which the volume closes. Here Miller has collected from various sources 165 cases in which severe complications have resulted from diseased teeth or have followed dental operations alone, and of these, 63, or somewhat more than 38 per cent., ended fatally.

The author's theory of the causation of dental caries, so elaborately detailed in the first edition, remains practically unaltered in this, being only strengthened by his subsequent researches.

That a new edition of a work so technical and of such limited scope should have been required after so short an interval as three years, is ample evidence of the high esteem in which it is held. It contains many valuable suggestions for the surgeon as well as the dentist, and cannot fail to be of interest to all who are occupied with the various problems connected with the causation and prevention of infectious diseases. J. S. E.

A Text-book of Morbid Histology for Students and Practitioners. By Rupert Boyce, M.B., M.R.C.S., Assistant Professor of Pathology in University College, London. 8vo., pp. xxiv., 477; 130 colored illustrations. New York: D. Appleton & Co., 1892.

The difficulty of conveying a correct conception of pathological histology outside of the laboratory and away from specimens of the various diseased conditions is so great, that much difference of opinion exists as to the best mode of presentation of the subject in a text-book. In the

work before us the author has attempted to supply the requirements of ocular demonstration by a large number of illustrations of the various lesions, and the bulk of his text is devoted to their description and analysis. The work may therefore be regarded as much an atlas as a text-book.

The arrangement of the book and the views contained in it are in accord with the presentation of the subject at University College, and Professor Horsley, to whom the volume is dedicated, has contributed an introductory chapter. In the first chapter are concise directions for hardening, imbedding, cutting, staining, etc., with a description of the microscope and necessary accessory apparatus. Chapters II.–X., inclusive, are devoted to Inflammation, Repair, Degeneration, Neoplasms, and the Infectious Diseases. As a basis for the discussion of inflammation the lung is chosen, as being of simple structure and as affording in its alveoli excellent opportunity for the study of the various exudates. The remaining ten chapters are occupied in the description of the lesions as they occur in the different organs. The work concludes with a bibliography and an index.

We cannot but feel that for text-book illustration, good drawings, made with the assistance of the camera lucida, stippled paper, and the various other aids now at our disposal, are to be preferred to even the best photomicrographs. By neither process is it possible to exactly represent all the details of the very simplest tissue, but the judiciously made drawing selects those of importance, while these are as likely as not to be invisible in the photomicrograph. In the present volume the illustrations appear to be lithographic reproductions of photomicrographs. Many of them illustrate topographical features very well, but the majority are open to the criticism of lacking in detail. They are too small to be really good, are taken, as a rule, with comparatively low powers of the microscope, and, in many, important details are omitted. The illustration of a fibroma, to take an example at random, shows a circular field dotted over with irregular bluish spots without the faintest suggestion of any fibrous structure. Again, the specimens seem to have been stained with nuclear dyes only, and we are accordingly left to imagine the size, shape, and character of the cell body.

We regret to say that the text, too, is disappointing. It is more of the nature of a summary of the various changes than of any description of them. Three coarsely printed pages is certainly inadequate space for the discussion of a subject so fundamentally important as inflammation prior to the description of specimens. There is also throughout the book an unfortunate lack of any philosophical indication of the relation between cause and effect, and no useful generalizations are offered to aid the reader to understand the different phases of the same lesion dependent upon differences in structure of the various organs. These we conceive to be of the most vital importance in the presentation of so complex a subject as pathological anatomy. Without them it is little more than a catalogue of dissociated lesions, while with their aid it quickly reduces to a most logical simplicity. It is largely because of the lack of this aid that the work must be regarded with something of disappointment. J. S. E.

A MANUAL OF MEDICAL JURISPRUDENCE. By ALFRED SWAINE TAYLOR, M.D., F.R.S. Revised and edited by THOMAS STEVENSON, M.D., of London. Eleventh American edition. Edited, with Citations and Additions, from the twelfth English edition, by CLARK BELL, Esq., President of the American International Medico-Legal Congress of 1893, etc.

THIS work is another gift to Medical Jurisprudence by Mr. Clark Bell. It is a complete revision of all former American and English editions of this standard book. This edition contains a large amount of entirely new matter, many portions of the book having been rewritten by the editor. Many cases and authorities have been cited, and the citations brought down to the latest date.

The book is well printed in clear type, and covers between 700 and 800 pages, containing numerous plates.

The subjects treated of include the following: Medical Evidence; Poisoning; Wounds and Personal Injuries; Asphyxia (and under this head, drowning, hanging, strangulation, suffocation); Lightning and Electricity; Cold; Heat; Starvation; Pregnancy and its Legal Relations; Delivery; Criminal Abortion; Infanticide; Birth; Inheritance; Legitimacy; Paternity; Impotency; Sterility; Rape; Insanity; Life Insurance.

These general heads will give an idea of the scope and extent of the work. The book has so long been a standard treatise on the subject of medical jurisprudence, and has gone through so many editions—twelve English and eleven American—that there is little left to criticise, unless it is to note the admirable manner in which Mr. Clark Bell, in editing this edition, has enlarged and improved what already seemed complete, by bringing his many citations of cases down to date to meet the present law; and by adding much new matter he has furnished the medical profession and the bar with a valuable book of reference, one to be relied upon in daily practice, and quite up to the present needs, owing to its exhaustive character. The object of a work on this subject seems to be to bring within a small area matters which concern the duties of the educated physician and surgeon and which demand careful inquiry. A medical jurist should have a practical knowledge of all branches of his profession, and should be able to explain any medico-legal question which may arise. He knows not at what time he may be served with a subpœna to appear at court and testify to certain facts and to be asked his opinion as an expert in regard to questions arising from the commission of crimes of various kinds. For example, from the appearance of blood-stains, was the murder or assault committed yesterday or a week ago? was the wound made by a sharp or blunt instrument? did the deceased fall or was he struck on the head by another; or what was the cause of death?—thus enabling the judge to place the subject in an intelligible light before the jury, and assisting the jury in arriving at a just verdict. So, too, the lawyer and judge may study such a book to their advantage, in order to familiarize themselves with such matters—the judge for charging the jury, the lawyer for conducting his examination and cross-examination in criminal cases. For these reasons it would seem that the book is indispensable to the library of both physician and lawyer, and particularly the legal practitioner whose duties take him into the criminal courts.

Under the first general head, "Medical Evidence," medical and medico-legal duties are described.

The reader's attention is called to the value of notes taken in medico-legal investigations for use in court, and the care required in making medico-legal reports.

The editor gives some fifteen rules as to the admissibility and inadmissibility of dying declarations, and adds numerous citations of late American cases to support them.

In treating of the subject, "Trial at Assizes," the distinction is shown, that in England a witness is bound to obey a subpœna when reasonable expenses are tendered him, whereas in the United States every citizen is bound to obey such calls, and the accused is entitled to compulsory process, without prepayment of fees.

The question of "confidential communications" is discussed, there being a wide difference of opinion between the views of English common-law jurists and the legal and medical profession in many of the American States. On this subject quotations are made from the New York statutes, and from the code of civil procedure of New York and amendments thereto, as to communications of this nature and the ability to testify as to them.

The editor notes that the courts of our country are disinclined to allow medical works to be read in evidence, as they tend to confuse and mislead juries.

Under the important head of Experts, Expert Testimony, and Opinion Evidence, the editor has made a most valuable addition to the work, and the new decisions are numerous, applicable, and accurate; this is also true in the treatment of the subject of Insanity, and as to who are competent to testify as experts in cases involving this question.

The other heads under Medical Evidence are: Coroners' Inquests; Examination; Cross-examination; Re-examination; Presence in Court of Scientific Witnesses; License of Counsel; Rules for Delivery of Evidence; Fees.

Signs or Indications of Death: cessation of circulation and respiration; cooling of the body; cadaveric rigidity; rigor mortis; putrefaction mistaken for gangrene.

Under "Poisoning" we notice a division of the subject into Corrosive and Irritant Poisons; Metallic Irritants; Vegetable and other Irritants; Neurotic Poisons.

The work includes Gaseous Poisons generally, and refers to death and other results arising therefrom, when subjected to other influence, such as carbonic acid, charcoal vapor, carbonic oxide, coal and coke vapor, sulphurous acid, vapors of lime, cement and brick kilns, confined air, coal gas, water gas, carburetted hydrogen, nitrous oxide, sulphuretted hydrogen, effluvia of drains and sewers.

The treatment of the subject of Wounds and Personal Injuries is exhaustive and includes many plates. And in comparing the blood of man with that of animals, the editor has noted Prof. Reese's statements as to this, and those of Marshall D. Ewell and Dr. Formad, of Philadelphia, and gives the substance of a paper by himself, in a discussion of the subject before the Medico-Legal Society of New York, on "Blood and Blood-Stains," in May, 1892.

Under Malpractice, both the negligent and ignorant offence, the latest American decisions are given to support the rules laid down. The

editor notes that the weight of authority seems to decide that all which the law requires of physicians or surgeons is ordinary care, skill, and diligence in the practice of their profession, as other practitioners employ in their line and in that locality, and the burden of proof is on the plaintiff in an action for malpractice to show the want of care, diligence, and skill. In Pennsylvania, however, the courts have held that such skill was required "as thoroughly educated surgeons ordinarily employ," but the general rule seems to be as first stated.

The other subjects comprising the work have already been mentioned. Too much praise cannot be given to the editor for his thorough and painstaking labors, by which he has given to two professions a reference-book to be relied upon. P. W. M.

HUMAN EMBRYOLOGY. By CHARLES SEDGWICK MINOT, Professor of Histology and Embryology in Harvard University Medical School. 8vo., pp. 800, with 463 engravings. New York: Wm. Wood & Co., 1892.

UPON reading the characteristic preface to this valuable work, one is impressed by the opening sentence, which says that "the following attempt to present a comprehensive summary of embryology, as it bears upon the problems of human development, is the result of ten years' labor." Before going very far into the work itself, one becomes convinced of the success of the "attempt," as well as of the vast amount of labor done in those ten years.

The introduction deals with the histology and physiology of the uterus, and with the general outline of human development. The phenomena of menstruation are clearly set forth, and Williams's view of the throwing off of the entire uterine mucous membrane at each period, is regarded as based upon erroneous observations and interpretations. Professor Minot is convinced that only the superficial layers (epithelium) are lost. Then follows a detailed description of the changes in the decidua during pregnancy, at parturition, and post-partum, numerous original drawings being introduced to illustrate statements made; and the conclusion is drawn "that the gravid uterus is passing through the menstrual cycle prolonged and intensified. The function of gestation is a direct modification of the function of menstruation, and the two are physiologically homologous."

The book is divided into five parts, namely: "The Genital Products," "The Germ-layers," "The Embryo," "The Fœtal Appendages," and "The Fœtus." Part first explains the structure and development of the spermatozoa (from spermatoblasts, and these from the parent cells), and also of the ova, together with their maturation. The site of impregnation in man is probably the same as in other mammalia; that is, in the Fallopian tube, about one-half or one-third of the way from the fimbriated extremity. It takes the ovum eight days to reach the uterine cavity. "Theory of Sex," and "Heredity" are next discussed, the summary of the latter section being: "The child is like the parents, because its organization is regulated by not merely similar, but by some of the same chromatin as that of the parents." This is so, because the characteristic of the nucleus, chromatin, perpetuates itself

and the nucleus, as first pointed out by Oscar Hertwig, is the organ of hereditary transmission.

In the second part the various theories of the mesoderm are given, and the author expresses his approval of the "germ band theory" of Hatschek. Attention is drawn to the good that the parablast theory of His, although no longer tenable, did in first distinguishing the two primary groups of mesodermal tissues, for which the newer and clearer terms, mesothelium (lining of the primitive body cavity) and mesenchyme (embryonic connective tissue), are preferred.

An interesting feature of the part on "The Fœtus" is a series of drawings of young embryos, most of them from the author's own collection. Both this and the preceding portion (Fœtal Appendages) are especially complete and full.

The historical sketch at the end of many of the chapters makes the book of increased value to students of embryology as well as to others. It is possible to gain an approximate idea of the amount of work this volume represents by considering the fact that the reference list, comprising only such articles as were actually referred to in the course of the book, covers thirteen pages. The illustrations throughout are as clear and excellent as they are numerous. M. W.

THE MODERN ANTIPYRETICS: THEIR ACTION IN HEALTH AND DISEASE. By ISAAC OTT, M.D., Former Lecturer on Experimental Physiology in the University of Pennsylvania, etc. Second edition. Pp. iv, 125. Easton, Pa.: E. D. Vogel, 1892.

THE author is to be congratulated in that he has produced a thoroughly scientific monograph, and yet ever so practical in its teachings that a second edition has been called for. Commencing with the subject of heat, he describes his calorimeter, which he shows to be an instrument of precision. In a review of the literature he proves that the thermotaxic centres are distributed in the fore-, inter-, and after-brain and in the spinal cord, and a careful study of the facts, results of experimentation, and of clinical observations, shows that a revision of their functions is necessary, which he has presented in tabular form. The fevers of albumoses and peptones, septic from putrid blood, of malarial origin, receive careful consideration. The mode of action of antipyretics in health and fever is illustrated by tracings, and the chemical relationship of pyridine, quinoline, kairin, and thallin is clearly demonstrated. The questions of deep interest for the practising physician are fully set forth, and the latest data given. The general statement that antiseptic properties predominate in the alcohol hydrate derivatives, as in naphthol, while the antithermic properties are more prominent in the amidogen derivatives, thallin and kairin, and a predominance of analgesic properties exists in the amidogen compounds, in which an atom of hydrogen has been substituted by a molecule of a fatty radical, especially of methyl, as in antipyrine, phenacetine, and exalgine, is the text from which he deduces a sermon well worthy of careful study. In this

section we recognize many new aspirants for professional favor, showing that the more recent acquisitions have received attention. Quoting Sihler, he gives a brief but satisfactory exposition of the method of Brand in typhoid fever. In this disease, the author states that the difference between antipyretics and the cold-water treatment is that "the former decreases heat-production, the latter increases it; the one permits the source of thermogenesis to go on actively, the other represses it; the one favors the flame, the other smothers it." As one studies the newer antipyretics in the light of the information presented by this little book, he will certainly form a truer estimate of their value. R. W. W.

MEDICAL MICROSCOPY: A GUIDE TO THE USE OF THE MICROSCOPE IN MEDICAL PRACTICE. By FRANK J. WETHERED, M.D. (Lond.), Member of the Royal College of Physicians; Medical Registrar to the Middlesex Hospital, and Demonstrator of Practical Medicine to the Middlesex Hospital Medical School; late Assistant Physician to the City of London Hospital for Diseases of the Chest, Victoria Park. With illustrations. Philadelphia: P. Blakiston, Son & Co., 1892.

IN this work we have an excellent collection and arrangement of the material pertaining to medical microscopy—material that hitherto has been distributed under various headings. The first twelve chapters are devoted to the microscope and microscopical technique—matters that we have been accustomed to see in works on microscopy and histology. The author in his selection of microscopical methods has shown his ability to choose only the best, and the articles on Imbedding, Section-cutting, Staining, Mounting, etc., contain methods that are reliable, and the directions are very clearly expressed. A chapter on the examination of tumors follows, which, perhaps, might have been left out of the work. The rest of the book contains most excellent and accurate information on the examination of urinary deposits, feces, sputum, vomit, and blood. The examination for tubercle bacilli receives good attention, and the manner of proceeding in the different methods of staining is very explicitly given; exception might, perhaps, be taken to the recommendation of only two minutes' immersion in the heated stain in the Neelsen (Ziehl) method; the ordinary rule of at least five minutes, is, in our opinion, better. The discharges from cavities and the genital organs are also carefully considered, and at the end of the volume is a concise and excellent *résumé* of the various bacteriological methods employed in bacteriological investigations. The book can be recommended to those who desire to become acquainted with the latest and best knowledge on clinical microscopy. E. L. V.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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Resorcin in Chronic Gastritis.

Dr. W. H. Thompson makes a very careful report of the results of the use of this remedy in seventy-eight patients selected from his private practice. Of these cases, the failures numbered twenty-one; the successes were fifty-one, and he was doubtful concerning the remaining six. On reviewing his failures, they seemed to present one general characteristic in common, namely, that the gastric disturbance was in them consecutive to nervous disorder. In all histories with such a sequence, resorcin did not seem to have any effect one way or the other. Of the doubtful cases, four proved to be cases of stomach disorder dependent upon gall-stones. It is probable that so long as hepatic irritation continues, the subacute gastritis will continue, whatever be the treatment. Another case, that of a young married lady, with dyspepsia and causeless mental depression, often reported marked improvement and then the reverse. The last of the doubtful cases was that of a gentleman who finally developed ataxic symptoms. Of the successful cases, seventeen presented symptoms of gastric ulceration, the remainder showing only symptoms of gastritis. In cases of severe megrim the remedy had no effect in relieving the attacks themselves, but it had an undoubted effect, fully appreciated by the patients, of preventing the attacks. The element of intermittency which so fundamentally separates functional nervous disease from organic nervous disease, points strongly to a toxic origin, or to auto-infection, as the main factor in functional neuroses; the observation of the benefit of an antiseptic like resorcin tending to support this view. Resorcin, which is now chiefly obtained from benzol, is readily soluble in water, alcohol, ether, and oils, but not in chloroform. It is not irritating to the stomach, and is never "tasted" again by eructation. Except when combined with strong tinctures—then doubtless from the intolerance of alcohol

which goes with gastritis of any form—it does not "repeat" by having its taste returned from the stomach. It should be given in solution, as the powder is locally irritant, in an average dose of five grains one hour after meals. A dose of ten grains often causes dizziness.—*Merck's Bulletin*, 1893, No. 1, p. 8.

Papoid Digestion.

Dr. R. H. Chittenden has made a thorough study of this interesting substance, and believes that from his experiments the following conclusions may be drawn:

1. That papoid is a true, soluble, digestive ferment or mixture of ferments, of vegetable origin. 2. That it has marked proteolytic action in acid, alkaline, and neutral solutions and in the presence of many chemicals, antiseptics, and therapeutic agents. 3. That it has a peculiar softening and disintegrating action on proteids, and that its general proteolytic action is that of a genuine digestive ferment, similar to the ferments of animal origin. 4. That it has a certain amount of amylolytic or starch-dissolving power. 5. That it has a marked rennet-like action upon milk, and a pronounced digestive action upon milk-casein. 6. That it exerts its peculiar digestive power at a wide range of temperatures. 7. That the ordinary conditions of health and disease in the stomach and intestine are not liable to check its action, while certain possible conditions may accelerate it.—*Transactions of the Connecticut Academy of Arts and Sciences*, 1892, vol. ix.

The Treatment of Cardiac Dropsy.

Dr. R. Lépine regards the removal of an intercurrent pleuritic effusion as presenting obvious advantages, simple tapping being often sufficient to bring about an improvement in the cardiac condition. For the œdema of the feet and lower limbs, Southey's tubes are satisfactory, being kept in place by collodion or strips of plaster, the part being dusted with iodoform and covered with a bandage. Venesection, even, may be advisable. Digitalin in solution in alcohol, and in fairly large doses, produces beneficial effects. Although he has used caffeine in large doses for some years with good results—very marked in some cases—it was not until he made use of it by subcutaneous injection that he obtained the best results. In order to produce free diuresis it must exert its action suddenly and rapidly. By this method a larger dose can be introduced into the circulation, and it is more rapidly eliminated.—*The Medical Week*, 1893, No. 7, p. 73.

Piperazine in the Treatment of Stone in the Kidney.

Dr. David D. Stewart reports three cases in his usually careful manner. The urate of piperazine, which is said to be a neutral salt, is seven times more soluble than is the corresponding salt of lithium. Despite the affinity of this remedy for uric acid, and the extreme solubility of its urate, little can be expected from it in uratic chronic multiple arthritic enlargements, at least in the doses generally administered—fifteen grains daily. In much larger amounts, such as a drachm or two daily, exhibited over a continuous time,

more promising results may be anticipated; whether, however, such doses will be tolerated without injury, is yet to be determined. The present unfortunately high price of the drug prevents the determination of the question. In the first case, gravel, which had been a persistent and troublesome symptom for months, permanently disappeared. The second case, which was one of undoubted pyelitis, the pus has almost entirely disappeared from the urine, being only ascertained by microscopic examination. In the third case, that of probable mulberry calculus, no benefit has been obtained—which fact is in accordance with what might be anticipated from the behavior of this remedy with this salt of calcium, upon which it has no solvent action. The precise mode of action of piperazine is still obscure, although it is certain that it is beneficial in cases of gravel and stone.—*The Therapeutic Gazette*, 1893, No. 1, p. 19.

The Relative Value of the Several Substances Recommended as Antidotes to Phosphorus.

Dr. E. Q. Thornton, from his experiments in the laboratory, concludes that permanganate of potassium is the best antidote. It must be used before the poison has become absorbed, and must be well diluted (one-half to one per cent. solution), or vomiting will result before the chemical reaction has taken place in the stomach. It must be given in excess, as considerable permanganate is reduced by the organic substances in the stomach. While sulphate of copper and phosphorus are chemically incompatible, and reaction occurs instantly when they are brought into contact, they decidedly complicate a case of phosphorus-poisoning by causing severe gastro-enteritis. Any substance intended to act as a chemical antidote in the stomach must be given in excess, so that it may come in contact with all the poisonous material; but with sulphate of copper, whether given in excess or in the same chemical proportions required to make the change, violent gastro-intestinal inflammation results. In all cases of phosphorus-poisoning in which sulphate of copper was used as an antidote, death resulted; although the animal to which sulphate of copper alone was given, recovered, decided gastro-enteritis resulted. The animal to which the solution of peroxide of hydrogen was administered, recovered after poisoning by phosphorus. Unchanged phosphorus was vomited and passed by the bowels by this animal, and severe gastro-enteritis resulted. Peroxide of hydrogen is too slow in oxidizing the phosphorus, and too irritating upon the digestive tract to be a valuable antidote. Old French oil of turpentine, which is acid in reaction, is said to form with phosphorus a crystalline, spermaceti-like wax, which has been called "turpentine phosphoric acid." The ordinary oil of turpentine does not bring about this change, and inasmuch as the old French oil of turpentine cannot be obtained in this market, it should cease to be considered as a practical antidote.—*The Therapeutic Gazette*, 1893, No. 1, p. 8.

Cantharides in the Treatment of Chronic Nephritis.

Dr. H. Huchard, quoting Lancereaux, believes that this remedy affects directly the epithelial lesion of the kidney, and should be considered as a valuable remedy in the treatment of chronic nephritis. He has not used it

in the acute phase of nephritis, regarding the disappearance of the febrile condition and the onset of œdema, anasarca, and the dropsies to indicate the time for the commencement of the use of this remedy. He employs the tincture in daily doses of from six to twelve drops, believing that those of thirty, fifty, and even sixty drops, are certainly too large. It is best exhibited in emulsion. Two cases are reported in illustration of his belief in the value of this remedy. It is not necessary to multiply observations before rejecting, *a priori*, a remedy whose excellent effects have been demonstrated by reliable clinicians.—*Revue gén. de Clinique et de Thérapeutique*, 1893, No. 5, p. 68.

Chloralose.

MM. M. Hanriot and Ch. Richet have studied the physiological action of this new remedy. This substance is the result of the action of chloral anhydride upon glycose; it is crystallizable, soluble in boiling water, and on cooling deposits crystals. It can be administered, sufficiently diluted, in milk. It is very bitter and disagreeable, and leaves a nauseous after-taste if given in an aqueous solution. If administered to dogs it produces somnolence, a noticeable reflex and psychical excitability, but without slowing the respiration or heart, which retains its force, and when the sleep is profound the reflexes are all preserved. Their motor power is not lost, although they do not react to excitations, which, in a normal animal, are painful. Observations upon man show that this substance is a certain hypnotic. It can be exhibited in wafers, in dose from six to ten grains; and, in one instance, twenty-two grains produced no other effect than a prolonged sleep. The average dose is between six and seven grains, but it is better to commence with a smaller one.

M. L. Landouzy has used this drug during the past eight months as a soporific, always on patients without fever, without appreciable organic visceral lesions, neurasthenics of different degrees, with whom remedies of this class, even in large doses, have failed. In eleven cases, of thirteen, sleep resulted, generally of several hours' duration, restful, calm, and of agreeable awakening; sometimes it is followed by an unpleasant awakening, heaviness of the head, headache, vertigo, emptiness of the head, inappetence, slight malaise, which has persisted an hour after awakening. With two patients these symptoms were more serious, and accompanied by a desire to vomit, coldness of the extremities, cardiac oppression, tendency to fainting, and palpitation. A single dose of five grains, given an hour and a half after eating, may be repeated at the expiration of two hours. He believes this remedy to be superior to chloral, and in smaller dose, the head symptoms have appeared to be less than with the latter drug.

M. P. Marie records his observations in eleven cases of insomnia, claiming good results. In insomnia of alcoholic origin his successes were not equal to those from morphine, two cases only being cited.

M. R. Moutard-Martin states that the sleep is soon obtained, is light, and the awakening without the heaviness which is often experienced from chloral. There is no constipation, nor any unfavorable effect upon the stomach, and the appetite may even be increased. From a study of eight cases he concludes: 1. That it is an efficient hypnotic in doses of from five to ten grains.

2. That the preferable method of administration is in a cachet of six grains one hour before sleep is desired, and the second at the first moment of awakening. 3. That the sleep is a calm, dreamless one. 4. That a dose of six grains is followed by sleep within a half to one hour. 5. That the awakening is complete, and without heaviness of the head. 6. That after several days' successful use of this remedy, during from two to four days of intermission of it one observes a sleep not so good as with it, but better than before its administration.

M. CH. SÉGARD has experimented with this drug in six instances: neurasthenia, cardiac disease, arterio-sclerosis, cervico-brachial neuralgia, gout, and paralysis agitans, and concludes that, although it has no analgesic action, it is a reliable hypnotic, even in small doses.—*Comptes-rendus hebd. Société de Biologie*, 1893, No. 2, p. 1.

THE TREATMENT OF INTERMITTENT FEVER BY THE METHOD OF BOUDIN.

DR. DU CAZAL recognizes the fact that the treatment of this fever, by arsenic, is by no means novel, but the treatment of Boudin is not the treatment by arsenic, but by arsenic administered in a certain way. Arsenious acid is dissolved in water in the proportion of one to one thousand. Advantage is taken of the tolerance of arsenic at the outset and an amount of this solution is given, each day, equivalent to nearly one grain of arsenious acid, and this amount is continued daily until symptoms of intolerance appear—nausea, colic, sometimes even vomiting and a slight diarrhœa. The daily amount is so divided that it is taken in equal portions every quarter of an hour, from six or seven in the morning until seven or eight o'clock in the evening, in two or three spoonfuls of water or milk. The patient, also, must be well nourished. The writer would add a third requisite—that the administration of the remedy must be entrusted only to a person who will religiously follow the directions as to time and amount. At the end of from three to five days the symptoms of intolerance appear; then it is necessary to lengthen the interval between the doses, but not to suddenly stop the remedy. The interval of administration being doubled, again the symptoms of intolerance will appear at the end of forty-eight to seventy-two hours. Again the interval is doubled, and the remedy is continued for from eight to ten days. Relapses are not only rare, but even exceptional.—*Revue gén. de Clinique et de Thérap.*, 1893, No. 2, p. 17.

THE PHYSIOLOGICAL ACTION OF CHLOROFORM.

DRS. W. H. GASKELL and L. E. SHORE, on looking over the curves of the second Hyderabad Chloroform Commission, find that it is evident that this Commission did not supply any answer to the most important question connected with the action of chloroform, namely: What occurs when a large dose of chloroform is administered? The object of their investigation was to determine: 1. The primary effect of chloroform; and 2. The ultimate effect of a large dose on the vasomotor centre, and on the heart, respectively. They believe that the fall of blood-pressure caused by administration of chloroform is one primarily due to a weakening of the heart's action, and not to a paralysis

of the vasomotor centre. On the contrary, the primary effect of blood containing chloroform vapor on the vasomotor centre is over-excitation, causing thereby a marked rise of blood-pressure, and it is only after an excessive dose has been given that there is any evidence of any paralysis of this centre. The general conclusions are that the dangers of chloroform administration are: 1. Of causing a serious fall of pressure, owing to weakening of the heart from too great a percentage of chloroform in the air, which, combined with the action of chloroform on the respiratory centre, in its turn causes failure of respiration; and 2. Cessation of respiration after long administration, owing to keeping on the chloroform, although given with plenty of air, too long a time after complete anæsthesia has been established.—*British Medical Journal*, 1893, Nos. 1673, p. 105; 1674, p. 164; 1675, p. 222.

Hämol and Hämogallol.

Dr. A. Grünfeld has made a careful study of these two new preparations of iron. Quoting Busch, who found the iron contained in the urine to be increased to 150 per cent., he believes that hämogallol is a remarkably valuable iron preparation for absorption. These remedies are best prescribed diluted with four parts of white sugar, of which the dose is a teaspoonful of the dry powder upon the tongue with a swallow of water afterward, or seven or eight grains in starch wafers, taken at meal times. The price has been reduced, so that at the present time these remedies are within the means of patients.—*Deutsche med. Wochenschrift*, 1893, No. 3, S. 70.

The Action of Chloroform and Ether upon the Vascular System.

Dr. John A. Macwilliam has performed some laboratory experiments upon cats (a known quantity of the anæsthetic being carried into the lungs by artificial respiration), and in the tracings shown the chief points to be noticed are: 1. The evidences of enfeeblement and dilatation manifested in the heart under the influence of chloroform, these changes frequently beginning even before the conjunctival reflex was abolished, and when the fall of blood-pressure was not greater, and often not so great, as during chloroform anæsthesia brought on in the usual way. The state of the blood-pressure and the conjunctival reflex controvert the idea that an excessive dose of chloroform was present in the circulation. It is especially to be borne in mind, also, that the chloroform was not given in too concentrated a form, but freely mixed with air to quite as great a degree as when the anæsthetic is given by inhalation in the ordinary way. The depressing changes in the heart are of the same nature as those which can be seen in the heart at a deeper stage of anæsthesia, and they are quite in harmony with what is seen when the chest is suddenly opened and the heart exposed in an animal brought deeply under the influence of chloroform in the usual way—by inhalation. Moreover, they accord with the evidence supplied by the sudden occurrence of death, clearly due to cardiac failure, and not remediable by means adapted to meet a failure in the respiration and in the peripheral resistance in the vascular system. While the force and tone of the heart are

depressed by chloroform, there is no great change in the rhythm. The heart is beating rapidly in these experiments; the medullary cardiac inhibitory centre is paralyzed by the anæsthetic. 2. The contrast between the effects of ether and chloroform upon the heart when the respective anæsthetics are administered, freely diluted with air, in such an amount as to cause abolition of the conjunctival reflex. The conditions of experimentation were precisely the same in the two cases, when ether and when chloroform were given, except that the former anæsthetic was given much more freely than the latter. Under chloroform the blood-pressure falls, and there is a diminution in the force of the beats and the occurrence of marked dilatation of the auricle and ventricle. Under ether the blood-pressure became lowered, but the action of the heart showed no great change; the ventricular beat apparently increased somewhat in force; there was also a very brief, slight and unimportant phase of expansion [dilatation].—*The Journal of Physiology*, 1892, vol. xiii. p. 860.

The Treatment of Chloroform Collapse.

Dr. B. W. Richardson recommends, as important, artificial respiration accomplished by the double-acting bellows, inserting the exit tube into the nostril and emptying the lung, then gently inflate, and next empty and fill, in alternate stroke. Galvanism has been used (1) to excite and sustain respiration; (2) to excite and sustain the heart and respiration; (3) to excite the heart while the respiratory process was sustained by artificial respiration. Yet, as he cannot see how to use electrical excitation with advantage and on a known principle, he believes it to be unreasonable to recommend galvanic action as a means of resuscitation. Antidotal measures he believes to be hardly applicable to chloroform. Inversion of the body is most promising in collapse in the first stage, when syncopal apnœa is the mode of death. The injection of peroxide of hydrogen solutions into the peritoneal cavity, oxygen being liberated into the peritoneal sac, should result in a direct vivifying action of oxygen upon the diaphragm, and a direct absorption of oxygen into the blood, with revival of the contraction of the right auricle and ventricle. This, however, in experiments upon animals, failed, because the oxygen entered the venous system, changing venous blood into arterial, with separation of the oxygen in the free state in the form of bubbles, which would not pass through the capillaries of the lungs; death consequently took place in the same way as when air is injected into a vein.—*The Asclepiad*, 1892, No. 36, p. 337.

Poisoning by Chloroform.

Dr. A. B. Marfan reports the case of a man, forty-nine years old, who drank about two ounces of chloroform. He experienced acute epigastric pain, and slept for twelve hours; then vomited almost clear blood. On attempting to take food, it was immediately vomited, mixed with blood. Five days after, he entered the Necker Hospital, when a most striking jaundiced color of skin and conjunctivæ was remarked. There was marked tympanites, enormous liver, slight enlargement of the spleen. The stools were colorless, but mixed with a small quantity of black blood. The heart-

beats were feeble; pulse 68, small and soft; the temperature normal. The urine was albuminous and contained bile. An absolute milk diet was ordered, and bicarbonate of soda in large doses, with β-naphthol to combat the ulceration of the stomach, and to obtain gastro-intestinal antisepsis. After fourteen days he became convalescent, and recovered perfectly.—*Le Mercredi Médical*, 1892, No. 50, p. 593.

The Protective Inoculation of Men against Asiatic Cholera.

Dr. G. Klemperer has reviewed the important work done in the way of the determination of the methods by which immunity against cholera can be obtained. The protective influence of subcutaneous injection of the cholera bacillus culture, of the blood-serum of immunized animals, of the milk of immunized animals, has received careful attention. Noting the possibilities of error when the results of researches upon animals are to be considered as applicable to man, he believes that it is probable that subcutaneous injection of cultures, increasing their virulence, can, in the person inoculated, develop a certain protective power of the blood-serum. In determining how great this protection must be—the quantitative estimation—the observations of Lazarus are in point, who, making use of the blood-serum of persons who had been cured of cholera, rendered guinea-pigs immune against intoxication with the comma bacilli. The quantity required varied from about one-sixth of a drop to seven drops, when used for guinea-pigs. The author has sought to render men immune (1) by subcutaneous injection of virulent cultures; (2) by introducing warmed cultures into the stomach; (3) by injection of the milk of immunized goats. The first method showed by experiment that the blood-serum of the subject had acquired anti-toxic properties to a marked degree, even more than that of the patients who had recovered from mild cholera, so that it is probable that the subject is protected against cholera infection. In the second method he showed that here, also, the anti-toxic properties of the blood-serum of the subject had distinctly increased; but the effect was less than in the use of the first method. In the third method, practised upon man, a drachm of the milk of an immunized goat injected resulted in such a degree of protection that four drops of his blood-serum rendered guinea-pigs proof against cholera.—*Berliner klin. Wochenschrift*, 1892, No. 50, S. 1265.

Agathin.

Dr. Ilberg has employed this remedy in several cases, following the recommendation of Rosenbaum, that it was valuable in "neuritis and in rheumatic affections of muscles, joints, and tendons." The doses ranged from seven to fifteen grains, three times daily. After about twelve hours the urine became light-brown in color—seldom dark-green, similar to that from the absorption of carbolic acid—which persisted for twenty-four hours after the stopping of the remedy. The cases were supra-orbital neuralgia, sciatica, tabes dorsalis, acute and chronic articular rheumatism, and so-called gonorrhœal rheumatism. The neuralgic and tabetic patients took the remedy without result, excepting one who suffered from sciatica, who was relieved of

pain. The acute and the gonorrhœal rheumatics were not benefited. The chronic rheumatics showed a slight improvement, but hardly more than could have been expected from fourteen days' remaining in bed. The majority of patients complained of headache, particularly in the evening, and feeling of pressure in head. Other symptoms were: insomnia, vomiting, diarrhœa, *ardor urinæ*, feeling of heat, increased thirst, and the patient with gonorrhœal rheumatism experienced increased pain. It does not seem likely that agathin will be chosen as an anti-neuralgic and anti-rheumatic.—*Deutsche med. Wochenschrift*, 1893, No. 5, S. 119.

MEDICINE.

UNDER THE CHARGE OF

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The Blood in Cases of Phosphorus-poisoning.

V. Jaksch (*Deutsche med. Wochenschrift*, 1893, No. 1, p. 10) reports two cases of phosphorus-poisoning, in both of which the number of red blood-corpuscles was increased; in one the number of colorless corpuscles remained normal; in the other, which was complicated by an inflammatory condition, the number was increased. It was further found that the proportion of albumin in the circulating blood was normal in both cases; neither were changes demonstrable in the morphological elements of the blood. The specific gravity of the blood was normal, but the alkalinity was considerably diminished.

Hepatic Cirrhosis in a Boy of Nine.

Brown (*Archives of Pædiatrics*, x. 1, p. 48) has reported the case of a boy, nine years and nine months old, of healthy German parentage, who was seized with pain in the head, back, and abdomen; tympanites, epistaxis, and irregular elevation of temperature. Considerable improvement took place; but a short time later face, legs, and abdomen became swollen, and subsequently slight jaundice appeared for a few days. The urine was high-colored and passed in small amount, but was not albuminous. The bowels were constipated. Cathartics and diuretics gave rise to copious stools and increased diuresis and vomiting, but the ascites became so threatening as to necessitate thoracentesis, which had to be repeated several times, consider-

able quantities of fluid being evacuated. Throughout, the appetite continued enormous. There was a continued febrile movement, with morning remissions. Later, intense jaundice developed, and amid the symptoms of intoxication the boy died. Though not strong, he had never previously been seriously ill. He had always been an inordinate eater, though his food had not been particularly rich or varied. He had grown rapidly and was five feet in height, although his parents were rather undersized. He had drunk a little beer occasionally, but no alcohol in any other form. From early childhood he had suffered from bilious attacks, attended with diarrhœa and vomiting. At the post-mortem examination the body was found much emaciated. The abdomen was much distended, and presented on its surface veins of considerable size. The skin was deeply jaundiced. The abdominal cavity contained five and a half quarts of clear yellow serum. The liver was of greenish-yellow color and reduced to about half of its normal size; it was rough and nodular and cut with considerable resistance. The spleen was enlarged and deeply congested. The mucous membrane of the stomach was somewhat thickened. The kidneys were yellowish in color, congested, and rather larger than normal.

Myelitis after Gonorrhœa.

Leyden (*Zeitschrift für klin. Medicin*, xxi. 5, 6, p. 607) has reported the case of a man, twenty-seven years old, who, while engaged in carrying stone had been exposed to cold. He had been married for several years, and denied syphilitic infection. He had had influenza some fifteen months previously, and had partaken immoderately of alcohol. One night, on retiring, his attention was attracted to a painful twitching and weakness of the lower extremities, and on attempting to rise found himself unable to support himself; he was seized with vertigo and would have fallen had he not been caught. Consciousness was, however, not lost. A short time after this occurrence the left leg was completely paralyzed. On the next morning the right leg also was paralyzed. There was retention of urine, and the bowels were constipated. Urine and the stools were passed involuntarily. Vomiting occurred repeatedly and flatus was passed by the bowel. There was a sense of formication upon the back. The lips were cyanotic; the expression of the face dull, indifferent, apathetic. The skin was moist, of normal temperature, and presented no exanthem. The pulse was 104, regular, quick; tension and strength were rather subnormal. The respiration was costo-abdominal and accelerated. The patient complained of a sense of burning in the hypogastrium. The palsy of the lower extremities was atonic. At the inner aspect of the upper portion of the right thigh was a burn that had resulted from the application of a hot-water bottle. The abdominal muscles were capable of some movement. The knee-jerks were absent. The tendon reflex was present upon the right, absent upon the left. The cremasteric reflex was preserved. Common sensibility was diminished in the lower extremities; analgesia was present; the temperature sense was abolished. Percussion of the lower dorsal and of the lumbar vertebræ occasioned pain. The appetite was impaired. The abdomen was tensely distended and tender. A urethral discharge was observed, and gonococci were found in the secre-

tion. In the course of the attack there was slight elevation of temperature. Death took place after a week's illness. At the post-mortem examination the brain was found hyperæmic and œdematous. The cord and membranes presented no macroscopic lesion; but on microscopic examination a leuko-myelitis was found in the dorsal region, with some degree of inflammation of the pia. The peritoneum presented a reddened appearance; in numerous places there were deposits of fibrinous, puriform membrane. The vermiform appendix was free from lesion. The bladder was distended with turbid fluid. Its wall was hemorrhagic, especially in the region of the trigone; at the fundus was an area of ulceration, in places extending to the retro-peritoneal connective tissue, which had become infiltrated. The pelves of the kidneys were reddened. The substance of the left kidney appeared cloudy. On the surface of the right kidney were numerons prominent yellow points, each surrounded by an areola of redness, and from which could be scraped epithelial and pus cells. The medullary cones presented similar collections. The prostate was small. The lower portion of the rectum was reddened. The spleen was enlarged and softened. Both lungs presented numerous areas of lobular pneumonia.

Gout of the Intestines.

Dr. A. Haig (London) relates in the *Practitioner*, 1892, No. 295, several instances of colic and enteralgia in gouty subjects, clinically resembling in some instances typhlitis, which were rapidly relieved by full doses of salicylate of sodium. The author believes these to be gout of the intestinal walls, accompanied by the deposition of some insoluble urate in the fibrous structures of the intestine. Calomel aggravated the pain in one or two instances—possibly owing to the formation of the more insoluble urate of mercury. The salicylate acts by its solvent action on the urate deposit. The author attributes to a similar action its beneficial effects in the treatment of lead colic.

Treatment of Myxœdema.

At a recent meeting of the Clinical Society of London, Dr. Arthur Davies, Dr. Calvert, and Dr. Pasteur presented several patients who had been treated by internal administration of the thyroid gland itself, or by an extract made therefrom. The patients exhibited had, previous to treatment, presented all the characteristics and symptoms, physical as well as mental, of typical myxœdema. The improvement manifested in each case might fairly be called marvellous.

Within a short time of the commencement of treatment the patients begin to lose the characteristic phenomena of the disease. The features lose their puffy and mask-like appearance, the hair begins to grow, the skin becomes soft and smooth, and the intellect brightens. These obvious indications of improved nutrition are accompanied by an increased discharge of urea, a very marked and often rapid loss of weight, and a general sense of improved health. The improvement is manifested with striking constancy whatever method of administration is adopted, whether by subcutaneous injection, as

advocated by Murray, of Newcastle; by feeding with the raw gland, as recommended by Dr. Hector Mackenzie; or by taking the freshly prepared extract of the gland by the mouth, as in the case of Dr. Pasteur's patient. Equally good results were also obtained by Dr. Calvert by giving the gland lightly fried. In all cases the result was the same, and the conclusion seems irresistible that the thyroid gland does impart to the blood something which neutralizes the tendency to myxœdematous degeneration, and even removes the latter when it is present.

It would appear that it is not so much the rapidity of the changes effected in the body as the quantity of the substance administered that is open to risk. In Dr. Pasteur's patient alarming symptoms of cardiac enfeeblement, with syncopal attacks and dyspnœa, were directly attributable to an overdose (a whole sheep's thyroid) on two or three occasions, and did not reproduce themselves after the dose had been sensibly diminished (20 to 30 minims of freshly prepared extract in infusion of cloves every third day). Dr. Ord referred to a case in which similar alarming symptoms had occurred as the result of overdosing.

On the whole, the most convenient form of administration is in the form of powders (prepared by desiccating a glycerin extract of the gland), or by giving the fresh extract by the mouth.

West African "Blackwater" Fever.

At a recent meeting of the Pathological Society of London, Dr. Wheaton showed preparations from the organs of a patient who suffered from this disease. It occurred only in persons who had previously suffered from malaria, and was very fatal to Europeans. After a preliminary stage of numbness of the extremities and shivering, with lumbar pain, slight jaundice developed, with some fever, and was followed by the passage of porter-colored urine. In severe cases bilious vomiting occurred, and death followed on uræmic symptoms. One patient might have as many as ten attacks. The urine contained hæmoglobin and methæmoglobin, but no red blood-corpuscles. The clinical symptoms thus closely resemble paroxysmal hæmoglobinuria in European countries.

The preparations showed in the cortical portion of the kidneys cloudy swelling of the epithelium and the accumulation of granules of hæmoglobin in the tubules. In the pyramids the tubules were filled up by large masses of hæmoglobin. The spleen showed small red points, due to collections of hæmoglobin, as could be shown by examination with the microspectroscope, as also the presence of large circular cells with large nuclei, also containing pigment. The liver showed cloudy swelling of the cells and the presence of collections of large granules of pigment in them. There was no blood-pigment in the vessels or capillaries of the organs, nor were there extravasations of blood. The pathological appearances were thus seen to coincide with those recorded in the few instances in which the results of microscopical examination of the organs in paroxysmal hæmoglobinuria had been made, and confirmed the clinical resemblance between the latter disease and "blackwater" fever.

The plasmodium of malaria could not be found in these cases.

Diabetes following Influenza.

Drs. Hetherington and Brown record the case of a boy of fifteen who had influenza one month previously. For three weeks he had suffered from thirst, which became distressing, and was associated with the passage of large quantities of urine. He rapidly lost flesh and strength, and when seen presented an aspect suggestive of diabetes. The urine was typically diabetic, loaded with sugar, and of a specific gravity of 1040. He improved rapidly under strict dieting and half-grain doses of codeine. Nine days from commencement of treatment all sugar had disappeared from the urine. A similar case was reported in the *Lancet* for April, 1892.—*Lancet*, 1892, No. 3621.

Croupous Pneumonia complicated by Purpura Hæmorrhagica.

Jaworski (*Wiener med. Presse*, xxiv. 3, p. 84) has reported the case of a man, twenty-seven years old, who, while engaged in making an excavation, was seized with a severe chill, soon followed by profuse bleeding from the nose and mouth and loss of consciousness. On the following day the hemorrhage was repeated several times, and, in addition, pain in the right side of the chest and general weakness and depression manifested themselves. On examination, the evidences of croupous inflammation of the middle lobe of the right lung were detected. The skin was rather pale and somewhat moist. Upon the lower part of the body, from the umbilicus downward, were numerous subcutaneous hemorrhages, varying in size from a pinhead to a lentil. There were also hemorrhages beneath the conjunctiva, into the sclera and beneath the mucous membrane of the inferior surface of the tongue and lower lip. Neither the gums nor the palate nor the larynx presented any changes or lesions. The tongue was dry and covered with a coating with which coagulated blood was mixed. Blood constantly trickled from the nose. The temperature was elevated; the pulse full, tense, regular, accelerated; the respiration accelerated. There was considerable frothy, blood-stained expectoration. The urine was blood-stained and contained red corpuscles. The patient grew progressively worse, and died in the course of five days amid the signs of exhaustion. The history and the symptoms excluded phosphorus-poisoning, arsenical poisoning, scorbutus, and typhus fever. Bacteriological investigation was not made. The post-mortem examination confirmed the diagnosis of croupous pneumonia complicated by purpura hæmorrhagica.

A Case of Hemi-hypertrophy.

Tilanus (*Münchener med. Wochenschr.*, 1893, No. 4, p. 65) has reported the case of a girl, ten years old, who was brought to him by her mother because of a limp in walking. The left leg had always been shorter than the right, but recently the difference had become more decided. It had also been noticed that the right foot was larger than the left, so that the child could wear its mother's shoe. Upon examination it was found not only that the right leg and foot were larger in all dimensions than the left, but that the entire right half of the body (including the buttock, the arm, the hand, and the right half of the face) was better developed than the left half. The right

half of the tongue was the broader and thicker, the right cheek the thicker and fuller. The right foot and hand of the child were even larger than those of the mother. In stature the child measured 54 inches, the mother 63.5 inches. It could not be observed that there was any difference in the muscular development of the two halves of the body, though the right arm and the left leg were each stronger than their fellows. Electric reactions and reflexes showed no abnormality. The skin of the trunk, arms, and legs presented a marbled appearance, which became more decided when the child was cold, and especially upon the right; when the degree of cold was extreme the child actually became entirely blue. She was cheerful, intelligent, complained of no pain, and was in all other respects healthy. As a child, she had not been strong, and was three years old before she could walk; the asymmetry was also first observed at this time. There was no history of a similar affection in any other member of the family. There had been nothing unusual about the mother's pregnancy, and no accident had occurred after the birth of the child. Tilanus refers to a similar case reported by Möbius and to one by Demme—the only two that he could find in the accessible literature.

"Spontaneous" Rupture of the Stomach; Epithelioma of the Œsophagus.

Wunschheim (*Prager medicin. Wochenschr.*, xviii. 3, p. 21) has reported the case of a man, fifty-two years old, who for a period of about six months had presented symptoms of gastric derangement, to which difficulty of swallowing was early added, so that finally solids could not be taken at all, and liquids only in small quantities. An œsophageal sound encountered obstruction ten and one-third inches from the teeth. On the evening of the day on which this examination was made, the patient's pulse became smaller and symptoms of collapse appeared, which soon subsided, to be renewed, however, on the following day and leading to a fatal termination. At the necropsy a neoplasm was found in the œsophagus about two and one-half inches below the inter-arytenoid notch, and a second new-growth three-quarters of an inch lower which involved almost the entire circumference of the gullet. Both growths were ulcerated, and the lower had perforated the aorta between the third and fourth intercostal arteries. Other nodules were present further down in the œsophagus, and the related lymphatic glands were enlarged. The stomach was distended by a large quantity of blood, partly liquid, partly clotted, and a process of clotted blood extended from the stomach through the cardia a short distance into the œsophagus. The pylorus was firmly closed. On the posterior wall of the stomach, beginning near the cardia and running parallel with and close to the lesser curvature, was a tear of the mucous membrane about two inches long. At a distance of three inches, and parallel with this tear, was a second tear of equal length. The margins of neither tear presented evidence of digestion. The small intestine, down to the ileo-cæcal valve, contained dark, soft chymous masses, while the contents of the large intestine were bile-stained. On histological examination the neoplasm was found to be a squamous-celled carcinoma. The interesting features of the case were the fatal hemorrhage, unattended

with vomiting, and the incomplete rupture of the stomach, probably as a result of over-distention. Wunschheim could find records of only six cases of "spontaneous" rupture of the stomach.

SURGERY.

UNDER THE CHARGE OF

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LARYNGECTOMY.

LANZ, in the *Archiv für klinische Chirurgie*, 1892, Band xliv., Heft 1, after a review of the subject, reports in detail twelve operations performed in Kocher's clinic in Berne. The conditions calling for operation were as follows: Lupus, one case; carcinoma, five cases; epithelioma, four cases; tuberculosis, one case; sarcoma, involving the larynx secondarily, one case. As a rule, a preliminary tracheotomy was performed. The most common neoplasm demanding extirpation of the larynx is carcinoma. The disease is much more common in men than in women. In the Breslau clinic, of nine cases but two were in women. Of one hundred and seventy-six cases of carcinoma of the larynx collected by Wassermann, but twenty-nine affected the female sex. The question of effecting a radical cure by this operation depends upon the stage which the disease has reached. That the final results of laryngectomy are not more satisfactory is due to the fact that the patient does not consult the surgeon until the disease is in an advanced stage. As a rule, valuable time has been lost in using gargles, and in submitting to various local applications. Usually by the time malignant disease is diagnosticated the process is far advanced. Primary carcinoma of the larynx, as is shown by the cases reported, does not tend to give metastasis, but to remain localized and to spread by contiguity. The more distant lymph glands are not affected. A malignant tumor of this region cannot be extirpated too early, even at the expense of the sacrifice entailed by loss of the voice and difficulty in swallowing. Semon states that tumors of the larynx have always been found to be larger after laryngectomy than had been expected from the laryngoscopic picture. Endo-laryngeal excision is impossible, and the removal of the growth by such measures as the snare and by twisting off by means of forceps is condemned. The physician, the author remarks, who does not use the knife immediately in carcinoma of the breast, or does not send the patient

to a surgeon, is guilty of manslaughter, and the same remark will no doubt soon apply to cases of carcinoma of the larynx unless some specific for this affection is discovered. The operation is not a dangerous one. Of the twelve cases tabulated, all recovered but one. This patient died on the fifth day from interference with respiration by tenacious mucus which collected in the bronchial tubes.

Tumors of the Bladder.

Barling, describing the symptoms of bladder tumors (in the Birmingham *Medical Review*, 1892, vol. xxxii., No. 170), states that by far the most constant evidence of intra-vesical growth is hæmaturia. Of 201 miscellaneous tumors, hemorrhage was present in 162 of the cases. Papillomas are almost invariably accompanied by hemorrhage. This is usually the first, and sometimes, indeed, the only symptom. In carcinoma or sarcoma of the bladder, although hemorrhage may be the first symptom, pain and difficulty in emptying the bladder speedily arise in the majority of cases. Hæmaturia dependent upon tumor of the bladder is always intermittent at first. Gradually the intervals between the attacks become shorter and shorter, while the hemorrhage becomes more and more severe until, in the course of months or years, it may be constant. By this time, if the growth is malignant, other symptoms will have appeared. If the act of micturition be watched, the proportion of blood will often be found to increase greatly toward the end of the act. The amount of bleeding is no indication of the size of the tumor, nor is it, as a rule, increased by exercise, nor diminished by rest in bed.

Other early symptoms are pain, frequent micturition, retention and incontinence of urine. Sudden cessation of the flow may occur, as in vesical calculus. Fragments of the tumor were found in the urine 29 times in 201 cases, distributed as follows: In papilloma, 15 times in 76 cases; in fibroma and fibro-myoma, once in 20 cases; in myoma and myo-fibroma, twice in 15 cases; in dermoid, twice in 2 cases; in sarcoma, once in 22 cases; in carcinoma, 8 times in 64 cases. Usually the fragments correspond with the bulk of the tumor, but this is not invariably the rule.

As an aid in diagnosis, the vesical sound may be carefully used. A finger introduced into the vagina or rectum at the same time makes the sounding more conclusive, either for or against tumor; at the same time stone may be searched for. Bimanual palpation is of greater value than any of the other methods. It is carried out as follows: The patient is placed in the dorsal decubitus with the pelvis somewhat raised on a pillow. The bladder should be emptied with a catheter, and it is advisable to administer an anæsthetic, though not absolutely necessary. With the left hand, firm pressure is made above the pubes, while one or more fingers of the right hand are introduced into the rectum or vagina. In this way a tumor of any size can scarcely escape detection. In patients with deep perineums or considerable abdominal fat, the examination may give but little information. The advantages of this method are, that it does not provoke hemorrhage as does sounding; that the size and consistence of the growth can be made out, and the state of the bladder-walls and adjacent structures can be determined at the same time. The cystoscope gives most positive information of the condition

of the interior of the bladder. Therefore, when doubt exists, this instrument should be employed. Tumors of the bladder are to be distinguished from stone, cystitis with ulceration, tuberculosis of the bladder, malignant disease of the kidney, and renal calculus.

An Efficient Method of Controlling Hemorrhage after Supra-pubic Prostatectomy.

Keyes describes (*Medical Record*, New York, September 17, 1892) a new means of controlling hemorrhage after supra-pubic prostatectomy. Those upon whom this operation becomes necessary are so frequently advanced in years, and are so nearly exhausted by their trouble and the complications which so frequently accompany it, that any measure which will diminish the amount of hemorrhage after operation must prove of the greatest service. A tampon is made of bichloride gauze in the following manner: A square of four thicknesses, measuring about six inches either way, is cut; upon this are placed eight thicknesses whose sides measure four inches, and upon this eight other thicknesses three inches square. Centrally upon the three-inch pad a small white shirt-button is tied by a double ligature, which is then made to transfix the pad and tied upon the six inch-square surface. Each of the corners of the six-inch pad is stoutly tied with a piece of silk, the ends of which contain a double knot. To facilitate extraction a piece of silk is attached to the central button, the end of this containing a single knot. The pad is applied by passing an instrument through the urethra into the bladder, and attaching to this the ends of the silk which transfixed the pad, when the instrument is withdrawn, together with the silk threads. By pulling these the tampon is powerfully drawn into the excavation resulting from the operation. The double ligature is then tied over a piece of gauze at the urinary meatus. In case a perineal urethrotomy has been necessary the strings may be drawn through this wound and tied over a perineal pad. For the removal of this pad, after cutting the strings which are tied over the pad at the meatus or perineum, the last string attached to the button, and the strings fastened to the four corners, are all to be pulled upon together.

The author publishes a letter received from Dr. Cabot, of Boston, who has used this pad with success, but on account of some difficulty experienced in its removal the latter suggests the following modification: A long strip of gauze of the proper width is selected, the edges turned in and stitched. The strip is then folded repeatedly on itself, making a pad of the desired size. A double silk thread fastened to a button is passed through the centre of the pad, as in the preceding case. A single thread is then attached to the last fold of the gauze. Traction on this, after the retaining thread has been loosened, will unfold the gauze into a long strip, exactly as occurs in the "packing" that is constantly employed in surgery.

The Mechanism of Brain Injuries.

Miles discusses at length (*Brain*, London, 1892, part ii.), the various theories of concussion of the brain. The author casts the weight of his opinion against the possibility of mere concussion resulting in death, and he

has endeavored to explain the ultimate cause of the symptoms in cases of so-called concussion of the brain. The vibration theory, which was held by Bruns, Liston, and Miller, assumes that when a blow of sufficient force impinges on the cranium it must be flattened at the point of impact, and expanded in some other direction, these changes being of but momentary duration, and followed by a return to the normal condition; the idea being that as the brain fills the cranium, the vibrations of the latter are transmitted to the former. Miles objects to this view on the ground that the brain does not exactly fill the cranial cavity, but is surrounded by the cerebro-spinal fluid; that the cranium is not a spherical body, as claimed by the advocates of this theory, and that it is not, therefore, subject to the laws governing spherical bodies; and finally, that the anatomical arrangements are opposed to such a conclusion.

Faus, Nélaton, and others explain the symptoms of cerebral concussion by the multitude of capillary hemorrhages so often found in the brain substance. To this theory the author objects, because the multiple hemorrhages are not constantly found, and because, in some cases, the symptoms so soon pass off that no such lesions could have existed.

When it is considered how general the symptoms of concussion are—every portion of the brain being affected—a derangement of the circulation seems to offer a plausible working theory, and this view has been accepted by most modern writers. After weighing the testimony at hand, and experimenting on animals, the author "thinks that the weight of evidence is in favor of the view that the symptoms of cerebral concussion are due to a profound disturbance of the circulation of the brain, and that the alteration is in the direction of anæmia." The author's experiments seem to confirm the theory of Duret, that this anæmia was brought about reflexly by irritation of the restiform bodies.

Following the record of a series of experiments the author explains an injury to the head producing gross lesion as follows: "A blow is dealt to the cranial wall, and surrounding the point of impact the skull is depressed, forming the 'cone of depression,' and from the area into which this cone projects the cerebro-spinal fluid is forcibly expressed . . . the 'cone of bulging' would accommodate all, or most all, of this fluid. The cones of depression and bulging, however, are of only momentary existence . . . therefore, when the bone recoils a vacuum is formed first at the cone of depression, and next at the cone of bulging, when the fluid recedes." The result of this is, that the delicate bloodvessels being for the moment unsupported, rupture. The author believes, with LeGros Clark, that fracture from *contre-coup* is of very rare occurrence.

A number of experiments are detailed which are advanced in favor of the cerebro-spinal fluid wave theory. The autopsy revealed in some of these experiments, in addition to other lesions, hemorrhages into the internal ears and along the course of the auditory nerves, so that if the tympanic membranes had been ruptured, a symptom supposed to be diagnostic of fracture at the base of the skull, namely, bleeding and the flow of cerebro-spinal fluid from the ears, might have been present when no such fracture existed.

The author concludes as follows:

1. That the group of phenomena commonly spoken of as "concussion of the brain" is the result of a temporary anæmia of that organ.

2. That this anæmia is the result of reflex stimulation of the restiform bodies, and perhaps other important centres in the region of the bulb.

3. That these parts are stimulated by the wave of cerebro-spinal fluid, which rushes through the aqueduct of Sylvius, the foramen of Magendie, and from the sub-arachnoid space of the brain to that of the cord, when a severe blow is dealt over the skull.

4. That, in accordance with the laws of hydrostatics, this cerebro-spinal fluid wave will disturb the equilibrium of the ultimate nerve-cells throughout the central nervous system.

5. That the hemorrhages found throughout the brain-substance and on its surface are to be ascribed to the recession of the cerebro-spinal fluid, which naturally supports the bloodvessels of the cerebrum.

6. That the petechial hemorrhages found in cases of so-called concussion are not the proximate cause of the symptoms found in that condition. They are rather to be looked upon as an index of the force producing the injury than as the cause of the resulting phenomena.

Partial Resection of the Perineal (Deep) Urethra followed by Immediate and Total Restoration.

Guyon proposes (*Gaz. hebd. de Méd. et de Chir.*, 1892, No. 20) partial resection of the urethra in cases of stricture of this canal. It has been observed that the lower wall is most frequently the seat of lesions. The fact that the upper wall is generally healthy is in favor of partial resection, as advised by Guyon. In total resection the ends of the canal separate too much. Inasmuch as it is not necessary to make end-to-end approximation, the author uses the soft parts of the perineum to form the urethra. The danger of urinary infection is but slight, so that he closes the wound without drainage.

The operative procedure consists in making an incision through the soft parts of the perineum, exposing the urethra, when the diseased area is removed by transverse incisions in healthy tissue. The urethra may be united directly if it does not cause dangerous tension, otherwise the suture is to be made in a transverse direction; the mucous membrane is not included in the suture. The perineum is sewed in three layers, the deepest being sewed with catgut. A soft rubber catheter, 20 or 21 F., is introduced through the urethra and allowed to remain two to four days. Six cases are reported, of which four made rapid and satisfactory recoveries.

Traumatic Epidermal Cysts containing Matter of Sebaceous Appearance.

Péraire describes in the *Revue de Chirurgie*, 1892, No. 10, three cases from Terrier's service at the Hôpital Bichat. In two of these cases the cyst was situated in the pulp of the middle finger; in the third case it was found in the palm of the hand. It is probable that these cysts are usually confounded with sebaceous cysts, which would account for the apparent rarity

of the kind described by Péraire. Froquart first pointed out the true character of these cysts, and distinguished them by the name "epidermal." Jonnesco added the term "traumatic" to indicate one of the most important peculiarities of these cysts.

These tumors are of slow growth, gradually enlarging until their size becomes an inconvenience. When developed they are hard, elastic, and semi-fluctuating. The skin is adherent, but there is no change in its color, and no excoriation. The growth is movable on the deeper structures. In the cases reported the presence of the tumors was an annoyance to the patients in their work. There was no pain. In each case the cyst was excised.

Careful histological examination of these tumors showed them to be entirely of epithelial origin. There was nothing in their composition to suggest sebaceous matter. The four classical zones of the epidermis were represented in these tumors. Neither papillæ nor glandular elements have been seen in their structure.

Although traumatic, these growths do not result from a single accident, but from repeated trauma incident to the occupation of the patient.

The origin of these cysts is not a sebaceous gland, but a veritable indentation and proliferation of epidermal cells.

DERMATOLOGY.

UNDER THE CHARGE OF

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Dermatol in Dermatological Practice.

H. Isaac (*Deutsche med. Wochenschrift*, 1892, No. 25) speaks highly of this new remedy in cases where a superficial and drying effect is desired, as in the various forms of intertrigo resulting from friction and sweat; in intertrigo complicated with eczema; in acute weeping eczema; in acute inflammations produced by such substances as corrosive sublimate and iodoform; and in the various affections characterized by superficial losses of substance, as erosions, excoriations, and fissures. It is also valuable in burns of the second degree, and in freely-secreting leg ulcers, its action being to aid cicatrization.

Dysidrosis and Cheiropompholyx.

A. Santi (*Monatshefte für praktische Dermatologie*, Bd. xv., No. 4) discusses the nature of these diseases and the relation of one to the other, and concludes that they do not concern directly the apparatus of the sudoriparous secretion. Cheiropompholyx is a disease *sui generis*, and is in all probability

a neuritic dermatosis, in which the lesion of the sensible nerve elements is seated either peripherally or, more probably, centrally.

The disease which has been called dysidrosis does not really exist, but is a variety of hyperidrosis in which, owing to an abnormal, excessive development of epidermis, there results retention of sweat, constituting this so-called disease.

Case of Xanthoma Multiplex in a Child.

McCall Anderson reports (*Brit. Med. Journ.*, Dec. 1892) a case in a child three years of age, which was probably congenital. The lesions consisted of papules, thickly set together, varying in size from a pinhead to one-sixteenth of an inch in diameter. Some had coalesced. They were rounded, flat on their summits, glistening in certain lights, of a light buff color, soft in consistence, the surrounding skin being in no way thickened or infiltrated nor in any way altered. The outline of the confluent patches was made up of segments of circles. The lesions were symmetrical, situated on the face, neck, shoulders, arms, and legs, and were most numerous on the shoulders. The tissue, under the microscope, showed evidences of an irritant acting on the skin, producing the lesions of chronic inflammation in the form of a new cellular growth, similar to those of tuberculosis and syphilis, but without the arrangement or aggregation found in the latter. There is a further resemblance to the tuberculous lesion in that the cells possessed a striking tendency to fatty degeneration.

Two Cases of Dermatitis Gangrænosa Infantum.

Campbell Williams (*Lancet*, Nov. 12, 1892) records two examples of this rare disease, in neither of which was there any history or evidence of vaccinia or varicella as an etiological factor, nor were the infants the subjects of rickets or congenital syphilis. From a pathological standpoint the disease may be regarded as due to microbic infection. Thomas Barlow first pointed out the frequent presence of tubercle in this disorder. One case (unvaccinated) recovered; the other died, and both lungs were studded with miliary tubercles. The skin lesions were numerous, disseminated, roundish, sharp-edged, conical ulcers, varying in depth from three-quarters to a quarter of an inch, covered with a thin, adherent, brownish-black slough. The disease tended to localize about the buttocks and thighs. The ulcers were in some instances as large as a quarter-dollar. They improved or cicatrized under iodoform dressings.

Reaction of Normal Sweat.

Heuss (*Monatshefte für prakt. Derm.*, Bd. xiv., Nos. 9, 10, and 12) found the sweat of healthy men during rest to be normally acid, but when, after the administration of pilocarpine or boric acid baths, the sweat became profuse, the reaction was neutral or alkaline. The reaction of the sweat is to be distinguished from the acidity found in the skin as a tissue, which extends as far as the prickle-cell layer. Even when the sweat is alkaline the skin may be acid. The normal acidity of the sweat is the product of the less acid

neutral, or even alkaline secretion of the sweat glands and of the acid cutaneous fluid. Increase of alkalinity depends on the relative proportion of the sweat to the cutaneous fluid.

The Present Status of Psorospermosis.

Neisser (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) states that all that can be conceded now is the possibility of parasitic psorosperm inclusion. There is no proof that they are really parasites and not simply abnormal and pathological cell-formations. In the cases reported by Darier and others as psorospermosis follicularis, it is questionable whether the disease is due to parasites or is an inherited keratosis.

A Third Case of Xeroderma Pigmentosum in the Same Family.

Dr. A. W. Brayton, of Indianapolis, records (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) the above fact, the observation being additional evidence that this rare and disfiguring disease tends to occur in several members of the same family. The disease began in the sixth month of life, and with small, white atrophic spots upon the face, with no prodromal symptoms of erythema, telangiectases, or pigmentation. Dr. Brayton thinks that the soft, fleshy tumors which characterize the disease at a later stage should be scraped out promptly on their appearance, the resulting wounds bleeding freely, but healing satisfactorily.

Iodine, Carbolic Acid, and Chloral in Dermatology.

Dr. C. W. Cutler (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) for several years past has employed these remedies (equal parts of tincture of iodine, carbolic acid, and chloral) in combination as a topical application in numerous diseases of the skin, with good results. The combination is of more value than any of the drugs employed alone, and is antiseptic, antipruritic, analgesic, and absorbent. It is a powerful agent and should be employed with caution. It is liable to produce a dermatitis. It possesses a penetrating action into the skin, and hastens the absorption of inflammatory products in a remarkable manner. It is especially serviceable in parasitic diseases of skin and in all forms of chronic skin diseases characterized by thickening and induration of the skin, accompanied by scaling and itching. Ringworm of the scalp, beard, and body, alopecia areata, superficial paronychia, psoriasis, squamous eczema in small patches, lupus erythematosus, molluscum epitheliale, chloasma, vitiligo, and pruritus. In its pure state it should be applied by the physician himself, and at first only to small areas.

Leprosy: its Nature and Care.

Dr. Arning, of Hamburg, who has had much experience with this disease, presents his views before the Second International Dermatological Congress (*Brit. Journ. of Derm.*, October, 1892) as follows: 1. Leprosy is a chronic infectious disease, limited to mankind, and is conveyed directly or

indirectly by the bacillus lepræ. 2. The importance of this disease for Europe must not be underrated. 3. Besides the old European seats of leprosy, new endemic centres have recently developed on this continent (*e. g.*, Lithuania). 4. The conditions under which leprosy holds its old ground and develops new endemics are not yet clearly understood. Filth and poverty can no more be made exclusively responsible than a particular kind of food. 5. Leprous patients should be registered by the health authorities, and controlled as to their nationality, household, and changes of residence, upon international principles. 6. Should the disease have established a new footing of endemic type anywhere, then, but not before then, strict segregation in asylums or colonies should be resorted to.

Pediculi Capitis as a Cause of Pruritus Vulvæ.

Dr. G. F. Lydston (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) records a case where these parasites of the scalp were met with in large numbers on the hairs of the mons Veneris and labia in a girl of fifteen, who was examined for intense vulvar itching and for difficult menstruation. No pediculi were found on the scalp or elsewhere. The child was not aware of the presence of the parasites.

Syphilis Tardiva.

Professor Neumann, of Vienna (*Brit. Journ. of Derm.*, October, 1892), in an essay before the Second International Dermatological Congress, summarizes his views as follows : 1. The chief etiological factor in tertiary syphilis is some latent virus resulting from imperfect treatment in the early stages, assisted by constitutional diseases such as tuberculosis, malaria, scurvy, diabetes, Bright's disease, and chronic alcoholism. 2. Tertiary syphilis cannot be considered as exclusively a metastasis, but in most cases as the result of some exudation persisting in the tissues, which, under the influence of some of the factors enumerated above, takes on new action. 3. Tertiary syphilis occurs in about six or seven per cent. of all cases of syphilis, and in the great majority does so in the third year after primary infection, although it may show itself earlier or much later. 4. Its most frequent manifestations are in the skin, mucous membrane, and bones. 5. So-called epidemic syphilis (radesyge, skerljevo, frenjak, etc.) is not a disease *sui generis*, but ordinary tertiary syphilis, along with some cases of late hereditary syphilis. 6. Hereditary transmission to a later generation than the first has not been proven. 7. The examination of the blood gives similar results to that in secondary syphilis; the amount of hæmoglobin is invariably greatly diminished; the diminution of the number of the red corpuscles and increase of the white, although less marked, are equally constant changes.

Staphylococci Purulenta Cutanea.

Louis Wickham (*Brit. Journ. of Derm.*, July, 1892) points out that pus is very frequently met with in diseases of the skin, and that bacteriology has shown that suppuration may be produced by many totally different causes, the principal of which are: 1. Certain chemical substances, without any

microbic participation in the process, as essence of turpentine injected into cellular tissue. 2. Microbes of all kinds, as bacillus tuberculosis, which cuses "cold abscesses," bacillus anthracis, virus of chancroid, streptococcus pyogenes, staphylococcus pyogenes aureus et albus, etc. The conclusions of the author may be formulated thus: There exists a dermatosis which is caused by the pyogenic staphylococci, which merits the title of staphylococcia purulenta cutanea. This disease presents itself under such different forms as furuncle, certain folliculitides, and impetigo, according to the predominance of certain of its morbid elements. There exist, moreover, a large number of suppurative affections whose pathogenetic nature is not now entirely understood, but whose place will probably be with the staphylococcia.

OBSTETRICS.

UNDER THE CHARGE OF

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Puerperal Gonorrhœa.

Krönig, in the *Centralblatt für Gynäkologie*, 1893, No. 8, describes nine cases of puerperal gonorrhœa in which cultures were made from the lochial discharge. Pure cultures of the gonococcus were found most frequent from four to six days after delivery, and rapidly disappearing. The presence of these germs was accompanied by fever, in four cases rising to 104° F. The lochial discharge was increased, purulent, and not offensive. The lochia were observed to contain pus as early as four days after delivery. Seven of the nine cases showed marked fever two weeks after confinement, and had a purulent discharge which persisted. The uterus was also deficient in involution. Two cases gave more positive evidence of septic infection, the first leaving the hospital two weeks after confinement, returning two weeks later with an exudate in the pelvic peritoneum to the left of the uterus. The second patient was delayed in hospital with parametritis and gonorrhœal tendo-vaginitis. The patient also suffered from tendo-vaginitis of the right elbow and right hand. The exudate in the pelvis was accompanied by a temperature of 104°.

The following conclusions are drawn from the cases in question: In patients suffering from gonorrhœa, infection may easily travel to the interior of the uterus after labor; this infection may cause fever; this germ does not usually unite with others to produce mixed infection; gonorrhœal infection in the puerperal state is seldom directly dangerous to life, but leads to subsequent disorders, especially to infection of the endometrium, Fallopian tubes, and the tissues about the uterus.

Cystic Tumor of the Fœtal Neck Complicating Labor.

At a recent meeting of the Berlin Obstetrical Society, Strassmann showed the cadaver of a newborn infant having upon the right side of the neck a cystic tumor which had complicated labor. The child was born in breech presentation, emerging as far as the umbilicus, the birth ceasing at that point; although the arms were brought down, yet the remainder of the body did not follow, and an examination by the entire hand showed a tumor of the neck preventing delivery, It was punctured, and a quantity of clear yellowish fluid escaped, when birth was easily completed. The placenta was found to be œdematous.

A Case of Triple Ectopic Gestation.

In the *Centralblatt für Gynäkologie*, 1893, No. 7, Sanger reports a case of triple ectopic gestation in which a twin pregnancy was found in the wall of the uterus, while a third ovum was discovered in a blood-clot at the fimbriated extremity of the right tube. A careful examination of the case showed the condition to be an intra-mural twin pregnancy at the point of entrance of the right tube into the uterus, while at the abdominal end of the same tube there was a third ovum, the whole being an example of unilateral, ectopic, triple gestation.

Symphysiotomy Four and One-fourth Years After a Cæsarean Section.

From Chrobak's clinic, in Vienna, comes the account of this operation by Regnier, who reports it in the *Centralblatt für Gynäkologie*, 1893, No. 6. The patient was a multipara upon whom Breisky performed Cæsarean section for the relative indication four and one-fourth years previously. The patient was rhachitic, and was pregnant at term. The fœtus was in transverse presentation; the pelvis a typical, flat, rhachitic pelvis, whose antero-posterior diameter measured 7½ cm. After the field of operation had been made clean, the membranes were ruptured, and podalic version performed. Symphysiotomy was then easily accomplished, and the child delivered manually. The placenta was shortly afterward expressed. Measurements of the child's head showed that birth without radical interference would have been impossible. Two silver sutures were used to unite the symphysis, and iodoform gauze packed in the lower angle of the wound. The patient made an uninterrupted recovery.

The Performance of Version by Grasping One Leg of the Fœtus.

In the *Edinburgh Medical Journal*, 1893, No. 451, Nagle contributes an account of his experience in version accomplished by grasping one fœtal leg. He considers that it is a matter of absolute indifference which leg is seized in order to turn the fœtus *in utero*. If it is indicated that the leg brought down shall lie in front behind the symphysis, immediately after version the lower leg should be brought down in dorso-anterior position; in dorso-posterior, the upper leg should be grasped. In incomplete foot presen-

tation, with the posterior leg outstretched, the latter will rotate to the front so that the back of the fœtus glides past the promontory. If, in cases of the last sort, it is necessary to complete delivery, artificial rotation of the fœtal trunk, so that the outstretched leg comes in front, is indicated.

Is Symphysiotomy Justifiable where the Fœtus has Perished?

In the *Annales de Gynecologie*, February, 1893, this question is discussed by Queirel, of Marseilles, and Pinard, of Paris. The latter concludes that when the child is dead symphysiotomy is indicated only in those cases where the contraction of the pelvis is so great as to render embryotomy impossible, or so difficult that the latter becomes exceedingly dangerous to the mother.

The Induction of Premature Labor by Champétier de Ribes' Bag.

Herman and Spencer report (in the *British Medical Journal*, 1893, No. 1671) cases in which labor was induced by the use of this appliance. The bag measures three and one-half inches across its widest part, and is sufficiently elastic to be reduced by strong pressure to three inches. Letting a portion of the fluid escape from the bag makes it possible to compress it to two and one-half inches. It is made of silk, covered with rubber, has the shape of an elongated cone, measuring one foot in length and nearly four inches across the base. The upper third is curved to fit the pelvic axis, rapidly diminishing in diameter, while at the lower extremity there is a stop-cock by which the escape of fluid can be regulated. It is introduced by a special pair of forceps with detachable blades, and requires often a preliminary dilatation, especially in primiparæ. When sufficiently distended by 3 per cent. carbolic acid solution, the bag is left to be expelled with the child.

GYNECOLOGY.

UNDER THE CHARGE OF

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Internal Crossing of the Ovum.

Veit (*Zeitschrift für Geb. u. Gyn.*, Band xxiv., Heft 2) discusses at length the theories of Wyder, Pestalozza, and Schäffer with regard to the supposed passage of the ovum from one tube into the uterus and across its cavity into the opposite tube. In order that this should be proved, it is necessary, he thinks, to demonstrate conclusively the fact that the ovum is found in a tube the distal end of which has been entirely occluded by an inflammatory process occurring *before conception*. This point should be carefully noted in every operation for ectopic gestation. He believes that retained chorionic

villi within the tube may give rise to persistent hemorrhage, just the same as in an incomplete uterine abortion. In order that fluid blood may accumulate within the tube, it is necessary that either the distal end should be occluded, or that it should be closed by a bend due to surrounding inflammatory adhesions. If the ostium abdominale is open, and the tube is distended with blood, *ectopic gestation is always present;* the blood is then coagulated, and the clot is attached at one point on the inner wall of the tube. The blood is found to be fluid only at that stage in the tubal abortion at which the ovum has just been cast off and fresh hemorrhage is going on from the chorionic site. To this rule there is no exception save in the case of malignant disease. From an examination of his own specimens the writer arrives at the conclusion that in cases in which it is supposed that the ovum was discharged through the opposite tube into the uterus, and made its way subsequently into the other tube, it will be found that a small opening existed in the fimbriated end of the tube which was thought to be previously occluded, through which impregnation probably took place. Wyder's theory that, because an ovum has been found in the uterine end of an occluded tube, it was in the process of crossing over from the opposite side, is not tenable. This internal crossing of the ovum may be erroneously inferred in the following conditions: 1. When pregnancy occurs in a tubo-ovarian cyst, either in the tube or in the cyst. 2. When the ostium abdominale is closed during pregnancy. 3. When it is difficult to find the fimbriated extremity. 4. When the distal end of the tube has become occluded after rupture of the ectopic sac, by the retention of remains of the product of conception.

The writer adds some interesting observations bearing upon the site of impregnation. Wyder states that impregnation occurs at the fundus uteri, the ovum being carried downward by the motion of the tubal cilia toward the uterine cavity, while the upward motion of the cilia in the endometrium both assists the spermatozoa to move toward the fundus, and prevents the ovum from sinking downward to the cervix. Veit has extirpated three ectopic sacs, and found the cilia in the affected tube still in motion, while in other similar cases he has noted the presence of cilia. The theory that the cilia must be destroyed by previous inflammation before the impregnated ovum can remain in the tube has been generally adopted; but in reality it is only necessary that the progress of the ovum should be so slow that it is delayed in the tube until it is too large to pass into the uterus.

A New Method of Total Extirpation of the Cancerous Uterus.

Herzfeld (*Centralblatt für Gynäkologie*, 1893, No. 2) describes the following modification of the Hochenegg-Kraske operation, which he has adopted successfully in several cases: The patient being in Sims's position, an incision is made extending from the right posterior inferior spine, along the median line of the sacrum, to a point half an inch from the anus. The coccyx is removed, and, if necessary, the lowest sacral vertebra. The rectum being exposed, is drawn over to the left. The vagina can now be separated, if it is desired to resect a portion of it. Douglas's pouch is opened, the index finger is carried over the fundus uteri, and the organ is hooked backward. It is now possible to actually inspect the whole of the broad ligaments, the

vesico-uterine fold, and the ureters, and to feel the uterine arteries. Adhesions are easily separated under the eye. The advantages of the lateral position are now seen, since in Kraske's operation the peritoneum is carried forward, so that it is difficult to reach and incise it. The broad ligaments are ligated in three portions, any infiltrations at their lower borders being readily dissected out. The bladder is next separated. The peritoneal edges are now sutured, including the stumps of the broad ligaments, which are thus fixed extra-peritoneally. The peritoneal cavity is thus closed before the vagina is opened, so that no cancerous or septic matter can enter the abdomen.

The uterine arteries are next ligated, with their vaginal branches if necessary. The ureters can easily be felt and avoided. The vaginal fornix is then opened, and the uterus is removed, the vaginal wound being closed with Lembert sutures, so that the raw edges are turned into the vagina. There remains a conical wound a couple of inches in depth, the apex of which is at the line of peritoneal sutures; this is tamponed lightly with iodoform gauze and the external wound is closed, leaving a small opening at its lower angle for drainage.

The advantages of this method of total extirpation over Hochenegg's are the ease with which Douglas's pouch can be opened, and the fact that the peritoneal cavity is closed before the vagina is incised, while the operation in general is easier and less bloody. It is especially adapted to cases in which the vagina is involved and the uterus is fixed by adhesions, while the broad ligaments are still free from carcinomatous infiltration.

Changes in the Endometrium in Fibro-myoma of the Uterus.

Semb (*Archiv für Gynäkologie*, Band xliii., Heft 2) arrives at the following conclusions, based on an examination of twenty-five specimens of fibroid uterus:

1. In the majority of the cases of fibroid uterus the endometrium is simply hypertrophied, showing no evidences of inflammatory changes. This hypertrophy may affect both the glands and the stroma; sometimes it is entirely confined to the glands.

2. Secondary changes may occur in the endometrium, due to the pressure of the tumor, or to inflammation in or around the uterus, in consequence of which hypertrophy may be prevented. The mucosa covering submucous fibro-myomata uniformly undergoes atrophy as the result of continued pressure.

Two theories have been proposed to account for the frequent coexistence of hyperplastic endometritis with fibro-myoma, that of V. Campe and Wyder, in which the hypertrophy of the endometrium is referred to increased congestion caused by the presence of the tumor, and Uter's theory that both conditions are due to a common external irritation, which produces at once hypertrophy of the mucous lining of the uterine cavity and development of the fibroid tumor. The writer favors the latter view, because there appears to be no relation between the degree of hypertrophy of the endometrium and the size of the tumor.

The hemorrhage accompanying uterine fibroids, he believes, is not necessarily due to the hyperplastic endometritis, since it may be quite as profuse

when the mucosa is really atrophied. It is due to several factors—vascular hyperplasia, enlargement of the uterine cavity, the pressure of the tumor upon the uterine veins, accompanying endometritis, etc. From a scientific standpoint, curettage is not to be recommended as a routine practice. Before thoroughly scraping out the uterine cavity, fragments of tissue should be removed for microscopical examination, in order to decide whether the endometrium is in a condition of atrophy or hypertrophy.

It has been stated that the hypertrophy of the endometrium accompanying fibroid tumors predisposes to the development of carcinoma—in fact, Martin has advanced this as an argument for hysterectomy. The writer admits that cancerous degeneration of the hypertrophied mucosa may occur, but it is exceedingly rare, since he noted only one case in his twenty-five, and Schmal and Wyder found none in thirty-eight specimens which they examined. Carcinoma is no more likely to develop in connection with fibroids, he concludes, than in any chronic nutritive disturbance of a mucous membrane. Practically, however, obstinate hemorrhages in a case of uterine fibro-myoma should direct the attention of the gynecologist to the possibility of carcinomatous degeneration and lead him to consider whether total extirpation may not be preferable in the given case to supra-pubic amputation of the uterus.

The Pathology of the Endometrium.

Uter (*Zeitschr ift für Geburtshülfe und Gynäkologie*, Band xxv., Heft 2) has made an exhaustive study of the condition of the uterine mucosa in abortion, gonorrhœa, uterine fibroids, etc. He finds that the hypertrophy observed in fibroid uteri is mostly of the glandular type. In one case in which the hemorrhage was unusually profuse, an examination of the specimen showed that there was general hypertrophy of the interstitial tissue without marked vascular hyperplasia, leading to the inference that the bleeding was probably of the nature of parenchymatous oozing. He thinks that the hypertrophy of the endometrium is the initial change, the fibro-myoma developing secondarily—contrary to the view of Ehrendorfer—which is proved by the fact that if the patient is carefully examined when menorrhagia first appears, no enlargement of the corpus uteri may be noted, but after a certain interval it will sometimes be found that a fibroid tumor is developing.

He has not examined any specimen in which sarcomatous degeneration of the endometrium attended carcinoma of the cervix, as described by Abel and Landau, but he has found either simple glandular hypertrophy or else true adeno-carcinoma. Occasionally a mixed form of carcinoma and sarcoma (carcino-sarcoma) may exist. The distinction between adenoma and carcinoma of the endometrium is not possible clinically; it is better to reject the term "malignant adenoma," and to retain only carcinoma and adeno-carcinoma.

The Treatment of Pelvic Suppuration.

That this important subject continues to receive general attention is evidenced by the following recent articles:

Landau (*Berliner klin. Wochenschrift*, September 19, 1892), after discussing at length the various causes of pelvic suppuration, summarizes as follows:

Circumscribed, movable collections of pus are to be reached by cœliotomy; diffuse, complicated abscesses by resection of the posterior wall of the uterus, according to the method which he has previously advocated. He opposes Segond's dictum that vaginal hysterectomy is the proper procedure under the latter circumstances. In case of doubt, an explorative abdominal section is justifiable, since the surgeon can at once operate per vaginam if he finds that it is impossible to attack the purulent focus from above.

The same writer concludes a monograph on salpingitis (*Journal de Méd., de Chir., et de Pharmacol.*, tome i., fasc. 3, 1892) with minute directions regarding the method of evacuating a pyosalpinx per vaginam. He prefers incision to puncture. With the patient on her back, the surgeon passes a needle along his finger as a guide and plunges it into the sac, which an assistant depresses from above. An incision is made at the site of the puncture, sufficiently large to admit the index finger. If the tubal sac is adherent it is allowed to empty itself through the incision; if not, its edges are secured to the edges of the vaginal wound by forceps, which are left *in situ* for twenty-four hours, in order to insure adhesion. The forceps also prevent bleeding from the edges. If there is hemorrhage from the walls of the sac it can easily be controlled by a gauze tampon. The incision is devoid of danger, provided that one punctures behind the uterus, and at the sides of the posterior fornix. If the material within the tube is thick and cheesy, it can be removed with the finger, a weak antiseptic solution being used for irrigation. If the sac is large, a T-shaped drainage-tube should be used; otherwise a strip of iodoform gauze. Subsequent irrigation is not only unnecessary after an abscess has been opened, but may be dangerous if an antiseptic is used. The majority of the patients thus treated are cured at the end of six weeks, when, on examination, it will be found that a firm cicatricial cord occupies the site of the former pyosalpinx. There is no advantage in the method proposed by Wiedow, of opening the vaginal fornix as a preliminary measure, and tamponing with iodoform gauze, in order to secure adhesion of the sac which is opened a few days later.

Vaginal salpingotomy, recommended by Bonnecaze, is not only quite difficult, but is not devoid of danger from infection of the peritoneum. It is not possible to determine the exact situation of the sac as in abdominal section, and an explorative incision through the vagina cannot be closed directly like the abdominal wound, but must be left open, at considerable risk of infection.

Sometimes the surgeon finds on opening the abdomen that extirpation of the pus-tube, even if practicable, would be fraught with too much danger to the patient. In this case three courses are open to him. He can depress the sac to the bottom of Douglas's pouch, and then incise and drain it per vaginam, or resect the wall of the tube, drain it per vaginam, and then suture the opening—a procedure not to be advised. Lastly, if the tubal sac can be approximated to the abdominal wall, it can be united to the median wound, or to a new one in the flank, and drained in that way. If it can be determined beforehand that the sac is adherent to the abdominal wall, a direct incision can be made over it; it is unnecessary to make a counter-opening in the vagina, as it is sufficient to pack the sac with gauze, irrigation being employed only at the time of operation.

At the recent International Congress, SEGOND (*La Semaine Méd.*, 1892, No. 47) introduced a discussion on the subject of pelvic suppuration, in which he made a strong plea in favor of vaginal extirpation of the uterus, reporting one hundred and two cases in which he performed the operation, with eleven deaths, nine being due to septic peritonitis. With one exception the patients were entirely cured.

PÉAN, continuing the discussion, claimed that extirpation of the uterus and adnexa by his method (*i. e.*, piecemeal) was preferable to abdominal extirpation for the following reasons: 1. It is easier in simple cases, and much easier in complicated ones. 2. It is more thorough, effecting the complete removal and drainage of purulent foci, without danger of recurrence. 3. It offers a more favorable mode of exit for pus and septic fluids. 4. Through the vaginal incision one can examine perfectly the condition of the adnexa, and preserve organs which are not diseased. 5. The mortality is practically *nil*, and the troublesome sequelæ of abdominal section are absent. 6. Eventration, which is a positive danger in cœliotomy, is avoided. 7. It is the *only* suitable method of treating complicated and mixed forms of pelvic suppuration.

WILLEMS advocated perineotomy as a method of reaching and opening abscesses in the cul-de-sac. The other French speakers were mainly in favor of hysterectomy, but the English gynecologists were opposed to it.

PÆDIATRICS.

UNDER THE CHARGE OF

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DIURETIN IN THE TREATMENT OF SCARLATINAL NEPHRITIS.

DEMME (*Journal de Médecine de Paris*, 1892, No. 20, p. 241) states that diuretin is contra-indicated in infants under one year of age, with whom its administration is often followed by irritation of the gastro-intestinal mucous membrane. To older children, two to five years, he gives 7 to 22 grains daily, increasing this to 45 grains in children from six to ten years old. He has employed th is drug in 11 cases: in 4 of which there was anasarca; in 3, mitral insufficiency, with insufficient diuresis, despite the restoration of compensation by digitalis; in 2, chronic peritonitis with ascites; and in 2, pleurisy with effusion. Diuretin he finds to be an efficient diuretic, acting directly upon the epithelium of the kidney. It is still impossible to pronounce upon its influence over the circulation, but it seems to be of little moment. In scarlatinal nephritis it is very energetic, the ascites disappear-

ing more rapidly than under the action of any other diuretic. It is important, however, to prescribe it only after the end of the first stage of the inflammation. The anasarca and ascites following upon mitral lesions should be at first treated by digitalis until compensation has been secured, and then submitted to diuretin. Under these conditions all dropsy rapidly disappears.

A Typical Case of Articular Gout in a Child.

It is generally taught that childhood, and especially the female sex, confer immunity from gout, but occasionally cases are encountered. Gairdner, Scudamore, and Garrod have reported such instances. Trousseau mentions one case, and Lécorché cites that of a little girl of eleven years, in whom the classic involvement of the metatarso-phalangeal joint of the great toe was exemplified; no hereditary antecedents were discovered except in a great-uncle, who was gouty. Marboux, of Contrexéville (*Le Mercredi Médical*, 1892, No. 47, p. 557) gives notes of such a case. The patient was a girl of eleven years, of habitual good health, subject neither to migraine, abdominal pains, cutaneous eruptions, nor presenting any evidence of approaching menstruation. After a few hours' malaise, with some pain in the throat and tendency to constantly swallow, she was seized in the afternoon with pain in the plantar aspect of the right great toe, soon followed by dorsal pain and redness about the joint, with enlargement and prominence of the veins. There was no fever; the throat presented nothing abnormal. The father had suffered once from a slight attack of painful swelling of the same joint about eighteen months previously, but had attributed it to wearing tight boots. The child's attack subsided rapidly under a sedative ointment, but two days later suffered a relapse, with involvement of the same joint of the other foot. A rapid cure was effected under the persistent use of salicylate of sodium, three grammes daily.

Urinary Infection by the Bacterium Coli Commune.

Louis Guinon (*Revue mens. des Maladies de l'Enfance*, December, 1892, p. 573) reports an interesting case of this kind. The patient was a little girl of eight years, who was brought into the hospital with well-marked symptoms of typhoid fever. After the evolution of a rather mild attack of this disease, and during the convalescence, retention of urine occurred, necessitating catheterism for four days. This was immediately succeeded by cystitis, and seven days later the right kidney became the seat of a pyelitis. This was attended by spontaneous pain over the kidney, excessive sensitiveness of the anterior aspect of the flank, and by increase of the fever, which exhibited all the characteristics of a suppurative process. The left kidney was attacked fifteen days later, so that about a month after the onset of the cystitis the whole urinary tract was affected. Benzoate of soda (as much as 75 grains a day), salol (30 grains), with antipyrine, naphthol, and lavage of the bladder with boric acid solution, proved ineffectual, although a mild intoxication was occasioned by the salol. The biborate of soda in dose of 15 grains in a julep was then given, with completely successful results, after a long course of treatment lasting several months.

The bacteriological examinations were made by the author and MM.

Achard and Renaut, and showed pure cultures of the bacterium coli commune. This microbe was distinguished from the bacillus of Eberth and the bacterium lactis aërogenes by the fact that it provoked the fermentation of milk, and supplanted upon culture media the bacterium lactis aërogenes.

Inoculation experiments were also made. Three animals were inoculated with a bouillon culture of the third day. A guinea-pig which received a cubic centimetre of this culture within the peritoneum, died in thirty-six hours with peritonitis, but a rabbit and a second guinea-pig, which received the same dose, the first in a vein of the ear, and the second in the subcutaneous tissue of the abdomen, both survived, the guinea-pig showing less serious constitutional disturbance. The identity of the bacillus of urinary infection (described successively by Clado under the name of *bactérie septique*, and by Albarran and Hallé under that of *bactérie pyogène*) with the bacterium coli commune has been demonstrated by Morelle, Achard and Renaut, and Krogius. These observers have found it in a case of nephritis in a pregnant woman; in miliary renal abscesses in an old man; and in a case of calculous pyelo-nephritis. The bacterium isolated by Achard and Renaut failed to provoke peritonitis in guinea-pigs, even in dose of several cubic centimetres of pure culture, until lactose and carbonate of calcium were added to the liquid so as to produce an acid fermentation. The coli bacillus obtained in the author's case was much more virulent.

More recently Krogius has reported the existence in certain urinary infections of the bacterium lactis aërogenes, which he considers as a variety of the coli bacillus. But Achard and Renaut seem to have demonstrated the distinctness of the two varieties.

The Morbillous Form of Rubella.

H. Gillet (*Revue mens. des Maladies de l'Enfance*, January and February, 1893, pp. 1 and 71) concludes a study under this title with the following sentences:

Rubella, which is rarer in France than in more northern countries, appears there especially in the lighter form, often taking on the morbillous type. This attenuated form, which is without catarrh, constitutes a variety and not a separate malady. The eruption, even in this form, can, very exceptionally, be hemorrhagic, without either affecting the course of the disease or increasing the gravity of its prognosis. There is often around the papules a white zone of cutaneous anæmia.

Besides this form of rubella there exists a roseola which is not an exanthematous fever, but only an ordinary cutaneous efflorescence. Prophylactic measures should extend to rubella in all its forms.

Suppurative Periostitis in a Case of Broncho-pneumonia.

Schloepfer (*Correspondenzblatt für Schweizer Aerzte*, 1892, No. 12, p. 380) gives the notes of a case of a child of five and a half years, of tubercular antecedents, who, at the age of two years, had sustained a traumatism of the right side of the head; the wound had been slow in healing and left a depressed cicatrix. At the time of observation he passed through an attack of broncho-pneumonia, but with the beginning of decline of the fever after the

ninth day an abscess formed at the site of the old cicatrix, and when opened proved to be beneath the periosteum. A careful examination of the pus showed the presence of the staphylococcus aureus and albus.

There had been no external lesion at this site, nor any trace of eczema. The infection had, therefore, been brought by the blood stream, and the following mechanism is suggested by the author. The child had had a pneumonia dependent upon the pneumococcus of Fränkel-Weichselbaum; in the course of this disease there occurred a secondary infection by staphylococci, which alone, because of the short existence of the pneumococcus, had reached the blood and formed a metastatic abscess at the site of the old cicatrix, which, in this case, was the *locus minoris resistentiæ* of the organism.

A Second Attack of Measles within Ten Days.

Streng (*Deutsche medicinische Wochenschrift*, 1892, No. 48, p. 1085) reports a case of measles with *récidive*, observed in a girl of six years, under the following conditions:

The child was brought to the hospital with a full eruption of measles and a temperature of 99.8°. The nature of the eruption is said to have been unmistakable and no doubt of the diagnosis was entertained. On the following day the tem perature became normal, and the eruption began to fade, convalescence being rapidly established. But on the tenth day after entering the hospital the temperature rose to 103° and two days later the child was again covered with a measle rash more intense than the first. At the same time intense coryza, conjunctivitis, and bronchial catarrh were present. Critical defervescence occurred at the end of four days, and the child recovered as completely as from the first attack.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Leucocythæmia.

One of the most recent and perhaps the best discussion of the pathology of leucocythæmia is presented by Robert Muir in the *Journal of Pathology and Bacteriology* (October, 1892, vol. i., No. 2, p. 123). The literature of the subject has been thoroughly gone over, and the conclusions derived from its review are substantiated by valuable observations by the author in the study of seven cases of the disease.

Muir considers all cases of leucocythæmia as belonging to one of two types, distinct in their origin, and in many of their characters, and designated by him as the "spleno-medullary" and "lymphatic" types of the disease.

In the "spleno-medullary" form of leucocythæmia the spleen is enormously enlarged, while the lymphatic glands are unaffected, and very marked and characteristic changes occur in the blood. Eosinophile cells, large uninucleated corpuscles, different from any found in normal blood, and nucleated red corpuscles are present, and the ordinary multinucleated leucocytes of the blood are increased in number.

The eosinophile cells are often very abundant. Their apparent identity with the ordinary eosinophile cells of the marrow of the bones is shown, and this, coupled with the fact that they are larger, more irregular in shape, and differently nucleated from the ordinary eosinophile cell occasionally found in the blood in other conditions, is believed to point unmistakably to their derivation from the bone-marrow.

The large uninucleated leucocytes, which often attain a diameter quite double that of the smaller uninucleated leucocytes of the normal blood, are a striking feature of this form of the disease. They possess a single large nucleus, sometimes indented at one side, or horseshoe-shaped, but never showing the complicated multipartite character seen in many of the ordinary leucocytes. The nucleus is comparatively poor in chromatin distributed in a very open intra-nuclear network. When examined on the warm stage these cells were found to be devoid of any amœboid movement, while the smaller multinucleated cells in their immediate neighborhood were very active. These large cells are never present in normal blood, but occur in the spleno-medullary type of leucocythæmia often in very large numbers, in one of Muir's cases constituting more than 50 per cent. of all the colorless cells. The similarity of these cells to the so-called "marrow cells" of bone is pointed out, and a careful comparison of the two leads Muir to the belief that they are identical, and that those seen in the blood are in reality derived from the marrow. In the marrow these cells may be seen, in this form of leucocythæmia, in process of indirect cell-division, and Muir has also been able to see mitotic figures in the cells in the blood.

The origin and significance of the nucleated red corpuscle is as yet uncertain. It is known to be present in the blood in cases of pronounced anæmia. Their presence in the blood in the spleno-medullary type of leucocythæmia cannot, however, be attributed to this condition, as the anæmia is, as a rule, so slight as to be insignificant. They are usually present in considerable numbers, being more numerous in this form of leucocythæmia than in any other condition.

The ordinary multinucleated leucocytes, though increased in number, present their usual characters unaltered. The small uninucleated forms, or "lymphocytes," show no increase.

Considerable variation of the numbers of the corpuscles in the blood was noticed at different times, but in no case were the abnormal elements absent. In one case, in the course of four months, the number of leucocytes diminished from 250,000 per c.mm. to the normal, but the same abnormal elements —large uninucleated corpuscles, eosinophile cells, and nucleated red corpuscles—were still present.

In this form of leucocythæmia the spleen is enormously enlarged, while the lymphatic glands are unaffected.

Muir believes this type of the disease to be dependent upon a pathological condition of the bone-marrow. All the abnormal elements of the blood characterizing it are present in the marrow under normal conditions, and we have only to suppose their abnormal proliferation there and their subsequent escape into the blood and accumulation in the spleen pulp to explain the observed phenomena. It is probable, also, that division of some of the marrow cells occurs after their entrance into the blood and in the spleen, as mitotic figures have been observed in the corpuscles in both these locations, though they are not so numerous as in the bone-marrow.

The essential change in the blood in the "lymphatic" form of leucocythæmia is an enormous increase in the number of the uninucleated leucocytes normally present. These cells have a diameter of about 8 μ, and are characterized by a very narrow rim of protoplasm around a distinct nucleus, rich in chromatin and staining deeply. In Muir's cases there was little or no increase of multinucleated leucocytes; eosinophile cells, nucleated red corpuscles, and "marrow cells" were either absent or exceedingly scanty. Mitotic figures were not found in the blood. Anæmia was a pronounced feature. The lymphatic glands and, in some cases, the spleen were enlarged; in one case there was diffuse infiltration of the mediastinal connective tissue. The most prominent post-mortem change was a diffuse infiltration of the spleen, lymph-nodes, marrow, and various organs of the body with the same small uninucleated cells so abundant in the blood.

The determination of the origin of the disease in this form of leucocythæmia presents much greater difficulty than in the "spleno-medullary" type, and must, for the present, remain uncertain.

In conclusion, Muir states his belief that "the changes found in leucocythæmia cannot be explained on any other theory than that of an excessive and indefinite proliferation of a certain kind of cell, in its nature resembling that seen in the growth of many tumors." In many cases, at least, this cell is believed to be derived from the large uninucleated cell of the marrow of bone.
